

Prepared for

**CITY OF
ASPEN**

PROPOSAL

Aspen Water Integrated Resource Plan Strategic Consulting Services - Phase 1



PROJECT NO. 2019-079 // AUGUST 2019



August 30, 2019

Ms. Rebecca Hodgson
City of Aspen
130 South Galena Street
Aspen, Colorado 81611

Subject: Aspen Water Integrated Resource Plan Strategic Consulting Services – Phase One, 2019-079

Dear Ms. Hodgson and members of the Selection Committee:

What a difference a year makes. 2018 showed us what one of the worst snowpacks on record can mean for Aspen's water supply, and dry conditions persisted through the summer. Fast-forward to 2019, where communities across the state benefited from abundant snowfall and ongoing wet conditions. The threat of watershed wildfires in mid-2018 was supplanted by the impact of a major avalanche on Aspen's watershed last winter.

The range of conditions seen in just one year's time is a clear demonstration of the variability of our water supply scenarios, and the associated risks for the City's water supply portfolio. Further variability lies ahead – extended droughts interspersed with intensive precipitation events and years – as climate change continues to show its hand. This is a call to action for Aspen, as these conditions reiterate the need to increase water storage and prepare an integrated resource plan (IRP).

The Carollo team brings value to the Phase 1 IRP planning project through:

- › **Direct Application of Previous Work.** We understand the City's existing portfolio, and provide a team with valuable experience from helping other municipalities across the West continuously evolve their perspective about water. Team members Beorn Courtney, Logan Burba, and John Rehring will apply their insights into your system to screen out non-viable options in Phase 1, and focus the scope of the effort for Phase 2. Inge Wiersema brings IRP best practices from her work with some of the nation's most forward-thinking utilities, many of whom have struggled with drought in recent years.
- › **Deliberate Engagement.** While engagement of "external" stakeholders in the community is not slated to begin until Phase 2, we have deliberately sought the support of skilled facilitators and community engagement specialists in this Phase 1 planning effort. Rob Greenwood and Sarah Shadid have proven talent in unifying diverse perspectives toward a common goal. We will apply those skills in Phase 1 to develop a common City vision for the IRP, then expand to community-wide input in Phase 2.
- › **Thorough and Timely Results.** Setting a course for the City's conditional storage rights hinges on integrating the expanded storage into the broader vision and plan for water management in Aspen. Time will move quickly – permitting, design, and construction will take years once plans are established via the IRP. We propose a thoughtful, stepwise approach to developing the scope and priorities for Phase 2 by mid-January 2020.

We have learned through our other IRP projects that collaboration is not always easy, but it is essential to developing a unified vision. Your staff and the Plan stakeholders are integral to the success of your plan, and we will bring our experience with Los Angeles and other similar initiatives to help deliver an efficient, productive, and implementable IRP.

Aspen has recognized that it is time to look at water differently. That's something Carollo has done for more than 85 years, and we look forward to partnering with you to usher in a new age of water by helping you craft a technically sound, robust plan that will guide the future direction of Aspen's water portfolio.

Sincerely,

CAROLLO ENGINEERS, INC.


John P. Rehring, P.E.
Project Manager/Vice President

Introduction



1 Introduction

Carollo Engineers is the largest engineering firm in the United States focused solely on water. For more than 86 years, we have specialized in the research, planning, design, and construction of water, wastewater, and water reuse treatment and infrastructure. With this singular focus, we attract the best and brightest engineers and planners with a passion for water, giving you a multitude of top experts with the skills and knowledge to support your water needs.

Planning Expertise

Throughout our history Carollo has successfully completed more than 20,000 projects for public sector clients. We offer a full range of water system planning, water treatment plant evaluation, and treatment pilot study services. Water master planning has been an integral aspect of Carollo's experience for more than six decades. Many of our long-term client relationships began with long-range planning projects. In the past 20 years alone, we have provided planning services for over 70 municipal

clients with service area populations from 5,000 to over 1 million. These projects have involved water supply and resource evaluations, water quality and treatment analyses, area characteristic studies, water conservation alternative evaluations, resource alternative studies, user evaluations studies, and financial analyses. Using this information, we have completed water management plans and developed funding mechanisms.

COMPANY NAME

Carollo Engineers, Inc.

YEAR ESTABLISHED

1933

MAIN OFFICE

**2700 Ygnacio Valley Road, Ste 300
Walnut Creek, California 94598**

LOCAL OFFICE

**390 Interlocken Crescent, Ste 800
Broomfield, Colorado 80021**

COMPANY CONTACT

John Rehring

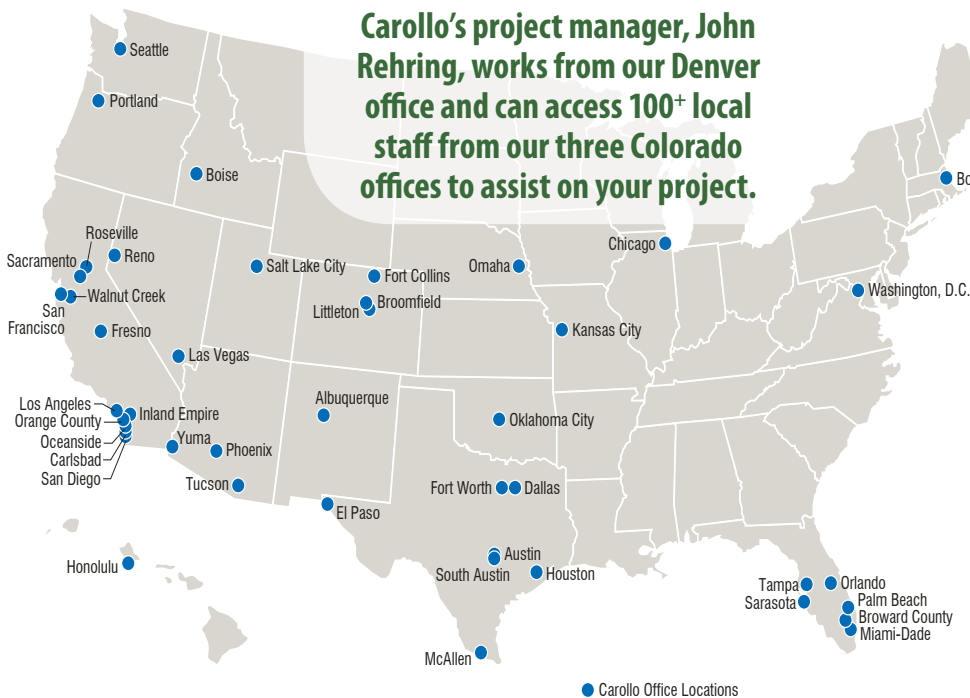
PHONE NUMBER

303-635-1220

EMAIL

jrehring@carollo.com

Carollo's project manager, John Rehring, works from our Denver office and can access 100+ local staff from our three Colorado offices to assist on your project.



Water Solutions

Reliable and resilient water supply is the lifeblood of our communities. With increasing pressure on water demands, we develop comprehensive solutions that meet both water quantity and quality objectives. As the largest water-focused engineering firm in the country we understand water systems, and deliver solutions that are integrated into existing water supply systems and the watershed at large - from water source, to treatment, to conveyance. We strive to develop water supply projects that are :



Sustainable and Resilient

We adopt a forward looking approach to evaluating alternatives. Some projects that may seem like a solution today will be less desirable under future natural and anthropogenic conditions. Our clients benefit from our long-term vision.



Holistic and Integrated Solutions

Water supply solutions are only effective over the long-term if they are tailored to work within the constraints of the watershed and existing water supply systems. Our holistic and comprehensive project development approach results in projects and solutions that work seamlessly within the natural and built watershed system.



Implementation Support

We work closely and proactively with regulatory agencies, stakeholders, and the public to develop projects through a transparent process that are approved by regulators and trusted by the public. The Carollo team is dedicated to help our client turn good project ideas into reality from start to finish!

OUR TEAM

Our team is built around a simple yet powerful concept: Put the best individuals into roles where they can add the highest value to the City of Aspen.

Our team is led by project manager **John Rehring**. John brings large-scale strategic planning expertise. He will work with the City of Aspen's project leaders and stakeholders to develop the priorities and scope of work for the Integrated Resource Plan (IRP). The IRP will lay the foundation for long-term collaboration and identify implementation strategies to realize Aspen's vision. John will draw on his track record as an experienced water resources project manager and his understanding of the Aspen resources and issues.

John is backed by a team of utility planners, urban planners, policy specialists, professional facilitators, and stakeholder outreach specialists. With its deep bench, this team is committed to working as one to deliver the right resources to develop a framework for water resources policies and collaboration opportunities to guide how water is managed in Aspen for the next generations.

Key personnel and support staff will be engaged throughout the planning process to provide input on policies, programs, and projects that align with community values and address plausible future challenges.

A description of team members' qualifications, experience, and roles on this IRP, for Phase 1 and Phase 2, are presented in this section. We fully commit these team members for the detailed development and duration of this project as detailed in Section 5.

We asked the following firms and individuals to join Carollo in supporting the IRP vision and planning for its development and implementation. Together, this team brings first-hand knowledge of city policies, programs, and projects, which creates efficiencies in the planning process.



Element Water Consulting, Inc. : Beorn Courtney will help synthesize past work to focus the Phase 2 scope and develop the IRP timeline and budget.



Ross Strategic: Rob Greenwood will help guide city and community involvement as well as IRP goals.

Together, our team of local and national experts will work with you to chart a pathway to a sustainable future.



City Project Manager

Margaret Medellin, PE



Project Manager

John Rehring, PE

Technical Advisor

Dale Helms

ASSESS
Task 1



Gap Analysis

Inge Wiersema, PE



Gap and Fatal Flaw Analysis

Beorn Courtney, PE¹



Fatal Flaw Analysis (Optional)

Logan Burba, PE¹

ENGAGE
Tasks 2 - 4



Utility Staff Interviews

Inge Wiersema, PE



City and Community Involvement

Rob Greenwood²



Community Involvement

Sarah Shadid²

ALIGN AND PLAN
Tasks 5 - 8



IRP Goals and Scoping

Inge Wiersema, PE



IRP Goals

Rob Greenwood²



IRP Scoping

Beorn Courtney, PE¹

¹ Element Water Consulting, Inc.

² Ross Strategic

A FEW MINUTES WITH YOUR PROJECT MANAGER



Q. John, what does project success look like for Phase 1 of Aspen's Integrated Resource Plan?

Two things come to mind to make Phase 1 successful. The first is completing this work on a fast-paced schedule so the detailed planning work can get underway in early 2020. That in turn is key to setting a course for the City's conditional storage rights and addressing the severe lack of water storage you have today.

Second is getting support from the wide range of City stakeholders. Elected officials and staff from other departments recognize there are many aspects of the community that are affected by water supply – we can take advantage of these diverse perspectives to develop better and more creative solutions. Phase 1 needs to drive toward a common vision for water supply, starting with alignment on the goals for the IRP – before the City begins exploring water supply futures in Phase 2 and engaging the broader public.

Q. What do you think is the biggest project challenge and how would you address it?

Hmm....I already spoke about schedule and getting input from multiple stakeholders to develop the Phase 2 scope. So clearly, we want to schedule the interviews and meetings right away at the kickoff meeting to avoid any unnecessary schedule slip. But that is simply a matter of

being proactive. Now, the real challenge that I see for Phase 1 is achieving alignment between all the different City viewpoints on a common set of goals for the IRP. The Phase 1 work is the opportunity to establish clearly-defined goals, set expectations, and define boundaries for what the IRP will accomplish and what it will not.

We address this by bringing you a team with both local knowledge and complex stakeholder engagement experience. Team members Inge Wiersema and Rob Greenwood have successfully facilitated vision-setting and goals alignment in projects for clients with many different stakeholders, like for the City of Los Angeles and King County. They know how to balance viewpoints from executive management and elected officials to vocal environmental groups. The engineering is always the easy part. But our team can also successfully maneuver through the more controversial and sensitive aspects of the project.

Q. One last question, why should Aspen select the Carollo Team?

I am very excited about this team as I believe this is the A-team for the City. We bring the right mix of people that have history working with your water resource portfolio and addressing Colorado water issues, plus new people that bring fresh ideas. You'll have direct access to the water resources team that has done much of your recent planning, meaning we can effectively use past work, screen out supply concepts that are not viable, and focus the detailed Phase 2 work so it is both efficient and effective. The Phase 1 work will also benefit from new perspectives and direct insights from some of the nation's most innovative "One Water" planning and creative ideas to achieve effective involvement from both City and the Community. Our team is excited about this opportunity – we're ready to hit the ground running.

KEY STAFF



JOHN REHRING, PE

Role on Aspen IRP Phase 1: Project Manager, Staff Interviews

John is a vice president and client service manager with a career specializing in water supply planning and infrastructure. His experience ranges from regional water supply and infrastructure planning to local water, wastewater, and reuse design and construction.

Similar Project Experience Highlights

- › Technical advisor for the City of Aspen, Colorado, Water Reuse Program Planning.
- › Project manager for the City of Norman, Oklahoma, 2060 Strategic Water Supply Plan.
- › Project manager for the City of Aurora, Colorado, Non-Potable Water Strategic Plan.



INGE WIERSEMA, PE

Role on Aspen IRP Phase 1: Gap Analysis, Utility Staff Interviews, IRP Goals and Scoping

Inge is an environmental engineer with 24 years of experience and is specialized in water system planning and water resources projects. She has also worked on various groundwater management plans, watershed management plans, urban water management plans, sewer system management plans, and water supply studies. Her technical experience also includes conceptual and preliminary design of pipelines, pump stations, and water treatment plants.

Similar Project Experience Highlights

- › Project manager for the One Water LA 2040 Plan for the City of Los Angeles, California.
- › Project Manager for the Clean Water Program for King County, Washington as a sub to Brown & Caldwell.



BEORN COURTNEY, PE

Role on Aspen IRP Phase 1: Gap and Fatal Flaw Analysis, IRP Scoping

Beorn is a licensed Professional Engineer with 22 years of experience in a broad range of water resources planning and policy topics including water conservation, water rights, hydrologic and hydraulic analyses, consumptive use and river basin modeling, and the nexus between water and land use planning. She has served as project manager for a variety of state, municipal, and private clients.

Similar Project Experience Highlights

- › Technical Update to Colorado's Water Plan (2019)
- › City of Aspen Drought Response Program
- › City of Aspen Water Efficient Landscaping Standards



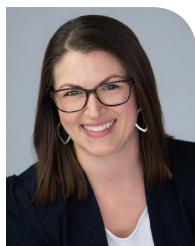
ROB GREENWOOD

Role on Aspen IRP Phase 1: City and Community Involvement Strategies, IRP Goals

Rob Greenwood specializes in designing and convening multi-stakeholder collaborative processes to address complex environmental challenges with a specific focus on the water resource arena. Mr. Greenwood has spent 30 years convening challenging and often fractious dialogs engaging executive level participants at the local, national, and international levels consistently delivering fully endorsed, robust, and resilient outcomes. His engagement experience spans one-day organizational retreats, community engagement workshops, and multi-year, multi-stakeholder advisory committees.

Similar Project Experience Highlights

- › King County, WA Clean Water Plan Regional Engagement
- › US EPA National PFAS Summit and National Action Plan
- › Prince William County Service Authority Strategic Plan Facilitation



LOGAN BURBA, PE

Role on Aspen IRP Phase 1: Gap Analysis, Fatal Flaw Analysis

Logan is a licensed Professional Engineer with 12 years of experience in water efficiency and supply planning, water rights investigations and consumptive use analyses, and modeling to support complex water supply and demand challenges. She has extensive experience managing regional cooperative projects including implementing and operating regional water supply plans, stakeholder engagement, master planning, and regional efficiency and education programs.

Similar Project Experience Highlights

- › City of Aspen Water Efficient Landscaping Standards
- › City of Aspen Drought Response Program



SARAH SHADID

Role on Aspen IRP Phase 1: Community Involvement Strategy

Sarah has a strong background in research, strategy, analysis, and facilitation in water, energy, and environmental policy issues. Sarah is an integral member of Ross Strategic's water practice and has developed a wide-ranging portfolio of water sector project experience. Sarah is passionate about working with clients to more effectively make informed decisions for drinking water, wastewater, and stormwater infrastructure to increase resiliency, protect human health, and safeguard the environment.

Similar Project Experience Highlights

- › Contaminants of Emerging Concern Recommendations Report
- › Alternatives Analysis: Incorporating Sustainability Criteria into Water Utility Decision Making

Our Team Sets a Plan in Phase 1 and is Ready to Assist with Phase 2

We designed our team to provide the services needed to develop an efficient and effective scope for the Phase 2 work. To offer continuity and further efficiencies, we also deliberately set up our team for a seamless transition to execution of the Phase 2 work, should we be selected to do so. While Phase 2 would include a broader set of staff resources, the Phase 1 leaders are well-suited to take on roles in Phase 2 as summarized below.

Team Member	Phase 1 Role	Phase 2 Role
John Rehring, PE	<ul style="list-style-type: none">• Project Manager• Utility, City, and Community interviews	<ul style="list-style-type: none">• Project Manager• Reuse options• IRP report development
Inge Wiersema, PE	<ul style="list-style-type: none">• Gap analysis• Utility staff interviews• IRP goals• IRP timeline, budget, & scope	<ul style="list-style-type: none">• Lead planner• Alternative supply and storage evaluations
Beorn Courtney, PE	<ul style="list-style-type: none">• Gap analysis• Fatal flaw analysis (optional)• IRP timeline, budget, & scope	<ul style="list-style-type: none">• Water resource opportunities• Water rights• Alternative supply and storage evaluations
Logan Burba, PE	<ul style="list-style-type: none">• Gap analysis• Fatal flaw analysis (optional)	<ul style="list-style-type: none">• Alternative supply and storage evaluations
Rob Greenwood	<ul style="list-style-type: none">• City involvement strategy• Community involvement strategy• IRP goals	<ul style="list-style-type: none">• Community engagement lead• City involvement
Sarah Shadid	<ul style="list-style-type: none">• Community involvement strategy	<ul style="list-style-type: none">• Community engagement

Seamless Transition into Phase 2

John Rehring will provide continuity in project management, drawing on his background of working with Utility staff and coordinating technical analyses with engagement programs for the community and elected officials. Inge Wiersema will drive the analysis of using the City's range of available supply sources – both traditional and non-traditional – by considering those options through a “one water” lens and a “fit for purpose” screening approach, much as she did for the One Water LA 2040 Plan. Beorn Courtney and Logan Burba will elevate their roles in Phase 2 as we dive deeper into the analysis of water supply strategies and projects – integrating their knowledge of water rights and resource options in Aspen and across Colorado's west slope. Team members Rob Greenwood and Sarah Shadid from Ross Strategic will guide the execution of the engagement scope of work. In Phase 2, we anticipate extending our “internal” dialogue with City departments and elected officials, while more formally extending and defining the role of the IRP Advisory Committee and implementing a series of focused public engagement strategies with two-way communication.



Qualifications and Experience

2 Qualifications and Experience

Carollo has delivered similar Integrated Water Resource Plans for clients from Los Angeles, CA to Norman, OK. On the following pages, we highlight projects where Carollo has brought water supply, treatment, and reuse together through integrated resource planning.

QUALIFICATIONS SUMMARY

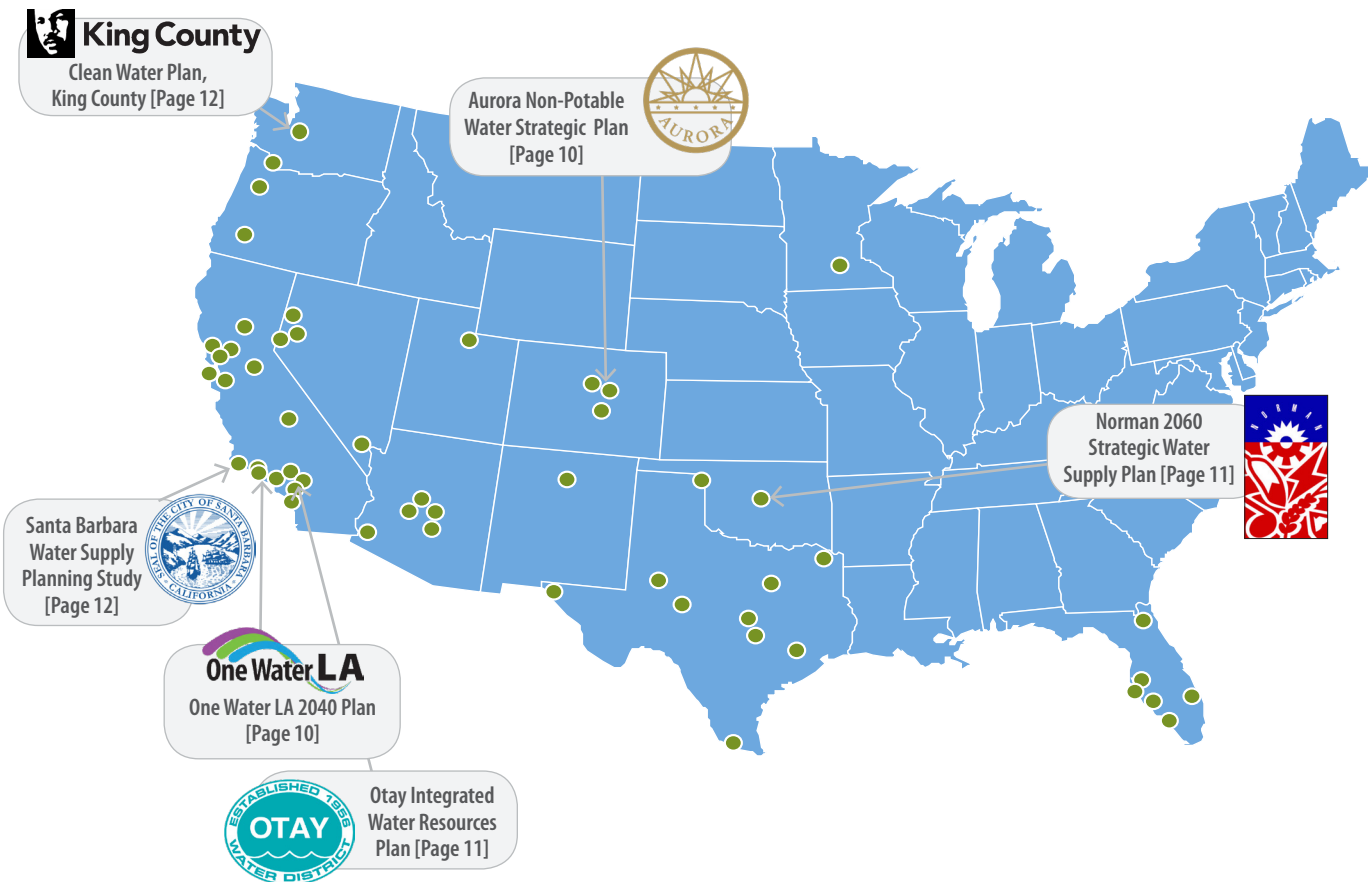
Carollo Engineers, Inc. is an environmental engineering firm specializing exclusively in water. Unlike our competitors, Carollo is completely dedicated to water agencies and their staff who share our passion for meeting our communities' water needs. Because we are 100 percent employee owned, we are also free to maintain that independence and that focus.

As you'll see throughout this proposal, Carollo exceeds the required qualifications for this project:

- › Our team provides **expertise and experience across the full suite of services required for the IRP**, as described in the RFP and in this proposal,

- › Carollo provides integrated water resource plans and related services for utilities across the country, for **some of the nation's most progressive utilities**.
- › Our **Project Manager, John Rehring**, has 30 years of experience, with the majority of those focused on local and regional water supply plans using planning tools and decision support methods similar to those proposed here.

In fact, Carollo has prominent national leadership in many of the key areas of focus for this IRP. **Carollo's roots in the arid southwest mean that innovative thinking in supply planning is in our DNA.** For example, no firm has conducted more applied research on potable reuse with leading national organizations than Carollo.



NON-POTABLE WATER STRATEGIC MASTER PLAN

City of Aurora, Colorado



PROJECT COMPLETION

August 2019

TEAM INVOLVEMENT

John Rehring, Inge Wiersema

Already a pioneer in Colorado non potable reuse and indirect potable reuse, Aurora Water sought opportunities to further reduce costs and water losses and to meet growing demands in its expanding service area.

Carollo analyzed increased use of raw water and reclaimed water to develop the Non potable Water Strategic Plan, employing One Water thinking and criteria to support decision-making for more efficient use of Aurora's water supplies to serve customers through 2070. Aurora turned to Carollo to assess non potable water strategies that could further stretch existing water supplies. The Non potable Water Strategic Plan employed holistic thinking of the entire water cycle , in which Carollo:

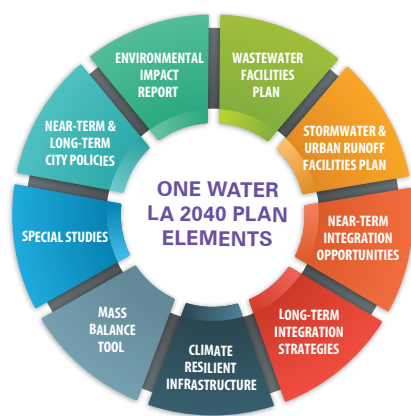
- › Developed a comprehensive framework to analyze alternatives considering water quality, cost, acceptability, sustainability, risk, and efficiency.
- › Evaluated the use of South Platte River raw water and reclaimed water from the City's Sand Creek Water Reuse Facility.
- › Identified expanded reclaimed water use opportunities for non potable industrial use, and the potential transition to potable supply augmentation.

Relevance to Aspen IRP

- › Two-phased project started with Carollo providing strategic direction and scoping support.
- › Direct engagement of Aurora Water management and staff to collaborate on process and decisions.
- › Plan for integration of additional non-potable and reclaimed water supplies to increase water delivery efficiency.

ONE WATER LA 2040 PLAN

City of Los Angeles, California



PROJECT COMPLETION

April 2019

TEAM INVOLVEMENT

Inge Wiersema

Los Angeles developed the One Water LA 2040 Plan to realize a strategic vision of managing all the City's water resources—surface water, groundwater, potable water, graywater, wastewater, recycled water, and stormwater—as “One Water”.

Carollo was the prime consultant and led a team of 20+ subconsultants to help develop the One Water LA 2040 Plan. This comprehensive stakeholder-driven planning effort provides a roadmap for multi-million dollar water infrastructure decisions to create a more water resilient and sustainable city.

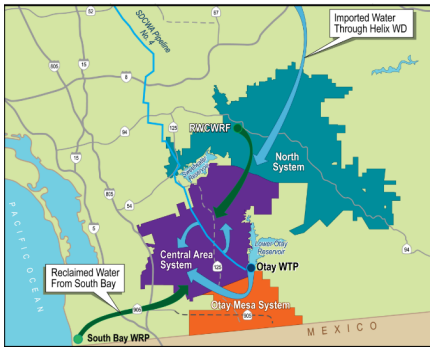
Through this first-of-its-kind One Water program, LA is building resiliency into every aspect of its water management strategy. This required unprecedented collaboration and has become an industry benchmark for developing a One Water framework to manage the urban water cycle.

Relevance to Aspen IRP

- › Created the Plan through a stakeholder-driven process (with 500+ stakeholders, representing 200+ organizations).
- › Comprehensive alternatives analysis to increase the City's water supply reliability.
- › Collaborated with City staff from multiple departments and executive management to develop scope of work descriptions and budgets to adapt to evolving project needs.

INTEGRATED WATER RESOURCES PLAN

Otay Water District, California



PROJECT COMPLETION

June 2016

TEAM INVOLVEMENT

Inge Wiersema

The Otay Water District (District) currently provides potable water, recycled water, and sewer service to roughly 220,000 customers in southeastern San Diego County. The region experiences minimal precipitation to provide local water sources and depends on imported water to meet the potable and non-potable demands.

Carollo prepared the 2015 Integrated Water Resources Plan (IRP) to examine alternative local supply options to serve the growing population under a wide variety of future conditions through 2040. A water demand forecast and supply gap analysis was conducted. Many previous studies were leveraged to describe and evaluate a variety of supply strategies, including water conservation, groundwater banking, brackish groundwater demineralization, new groundwater wells, recycled water for non-potable use, purchase of ocean desalinated water from two sites, and participation in three different regional potable reuse projects, including Pure Water San Diego.

Relevance to Aspen IRP

- › Review and data analysis of many existing studies to efficiently leverage previous planning work and identify data gaps.
- › Conducted interviews with operational staff, engineering, and management to get a complete picture of the issues, challenges, and opportunities facing the District
- › Preparation of a comprehensive integrated water resources plan that considered a variety of strategies to increase water supply reliability.

2060 STRATEGIC WATER SUPPLY PLAN

City of Norman, Oklahoma



PROJECT COMPLETION

August 2014

TEAM INVOLVEMENT

John Rehring, Inge Wiersema

Carollo developed the City of Norman's 2060 Strategic Water Supply Plan by evaluating existing and new raw water supply sources. To reflect the community's emphasis on efficient use of water resources, the evaluation included conservation, non-potable reuse, and potable reuse. The plan calls for continued use of both surface water and groundwater resources, recognizing the drought-resistant nature of groundwater, as well as the challenges of treating groundwater for locally-occurring metals (such as arsenic). Carollo also evaluated indirect potable reuse options in detail, including augmentation of nearby Lake Thunderbird with treated effluent and direct recharge of the Garber-Wellington aquifer with highly-treated reclaimed water via a network of injection wells.

The 2060 plan calls for expansion of Norman's groundwater wellfield with sustainable pumping rates, continued use of Lake Thunderbird, and future augmentation of Lake Thunderbird with highly-treated reclaimed water (indirect potable reuse). The project recommendations reflect a significant public outreach program that included public meetings, and a series of workshops with a project-specific Community Advisory Committee, and City Council study sessions.

Relevance to Aspen IRP

- › Extensive City Council engagement; Council buy-in to final plan
- › Community Advisory Committee
- › Multi-criteria decision support selected a diverse portfolio of sustainable supplies

CLEAN WATER PLAN

King County, Washington



PROJECT COMPLETION

Ongoing

TEAM INVOLVEMENT

Inge Wiersema, Rob Greenwood, Sarah Shadid

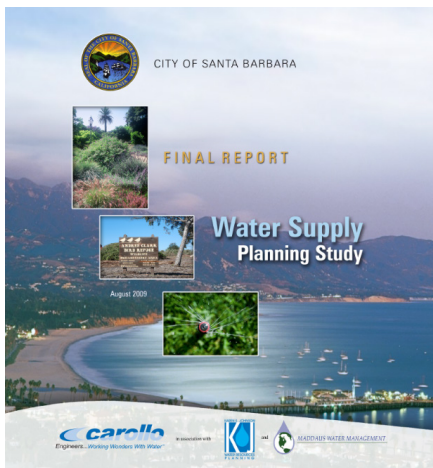
To serve a growing population, improve water quality, and protect public health for decades to come, King County is preparing its Clean Water Plan. The plan is developed using a scenario planning process, followed by a more traditional strategic utility planning phase. Additionally, a financial plan and an environmental impact study are part of the project. The plan includes a variety of elements, such as compliance with the consent decree; wastewater treatment; stormwater management; resource recovery; climate resiliency; water quality enhancement of Puget sound and inland water bodies; asset management; equity and social justice; affordability; and an active approach to community engagement. The Clean Water Plan provides a roadmap for King County through year 2060 with both near-term and long-term recommendations that answer King County's key planning questions around water quality and prepare the agency for future trends and challenges in the region.

Relevance to Aspen IRP

- › Strategic planning effort to develop a roadmap to ensure the right public investments are directed to the right actions at the right time.
- › Close collaboration with a variety of stakeholders to gain input from King County staff, Executive Management, a Steering Committee, a regional Advisory Group, and the general public throughout the planning process.
- › Development of a public outreach plan strongly influenced by a fixed seat advisory group and community engagement program that uses various tactics.

WATER SUPPLY PLANNING STUDY

City of Santa Barbara, California



PROJECT COMPLETION

August 2009

TEAM INVOLVEMENT

Inge Wiersema

Carollo prepared a Water Supply Planning Study report for the City of Santa Barbara that evaluates the City's water supply mix and assessed the City's opportunities to improve the overall water supply reliability. As part of this study, Carollo prepared the following assessments:

- › Water Conservation Assessment.
- › State Water Project Supply Reliability.
- › Localize Climate Change Impact.
- › Recycled Water System Expansion Opportunities.

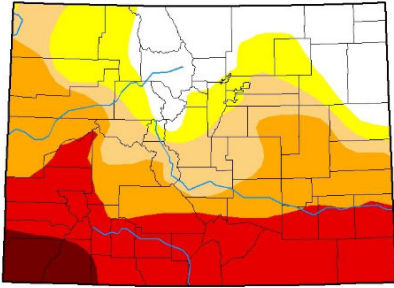
The findings of these key tasks were combined into an overall water supply management assessment that provides concrete and practical recommendations for the City to diversify its water supply mix and improve the reliability of the City's water supply. Water transfers on paper through participation in groundwater banking programs, recycled water system expansions, as well as water conservation measures, were integrated in the recommended water supply strategy.

Relevance to Aspen IRP

- › Preparation of a comprehensive and long-term water supply plan that considered a variety of strategies to increase water supply reliability.
- › Climate change resiliency analysis that considered prolonged droughts, reduced surface water storage and snowpack, and increasing demands.

DROUGHT RESPONSE PROGRAM

City of Aspen, Colorado



PROJECT COMPLETION

2019

TEAM INVOLVEMENT

ELEMENT Water Consulting, Inc.

After implementing Stage 2 restrictions for the first time in 2018, Aspen Utilities engaged ELEMENT to evaluate its drought response program and assist the City in preparing to quickly mobilize in the event that water supply conditions worsened over the winter of 2018/2019.

ELEMENT worked closely with Aspen Utility staff to evaluate its water shortage ordinance and to modernize the drought indicator monitoring and staged drought response program. Information gaps and data needs were identified, while summarizing available information to help categorize near-term decisions that needed to be made and longer-term improvements to procedures that could better prepare the City in the future. Through technical expertise and project communications, the Aspen Utility/ELEMENT team led several work sessions with staff across multiple City departments to facilitate targeted discussions, address questions, and inform recommendations that were ultimately made by staff to City Council. Through the workshops, key information was prepared that helped City leaders make policy decisions under times of uncertainty.

Relevance to the Aspen IRP

- › Interpreting available water-related information to identify unknowns and data needs.
- › Working with City staff across departments to represent different perspectives and prepare strategies for engaging City leaders and elected officials in water-related decisions.
- › Preparing project processes and timelines based on City staff and Council input.

WATER EFFICIENT LANDSCAPING ORDINANCE, WATER BUDGETS, AND STANDARDS

City of Aspen, Colorado



PROJECT COMPLETION

Ongoing

TEAM INVOLVEMENT

ELEMENT Water Consulting, Inc.

ELEMENT first introduced water efficient landscaping ordinances and water budgets to the City of Aspen while preparing Aspen's Water Efficiency Plan (WEP) and the Roaring Fork Watershed Regional WEP in 2015.

ELEMENT worked closely with Aspen Utility staff to engage other City personnel from multiple departments to identify existing and new procedures necessary for the successful implementation of the inter-departmental program. Water budgets were utilized as a tool to balance aesthetic preferences with water efficiency goals. With technical and programmatic assistance from ELEMENT, the City prepared new policy and minimum design, installation, maintenance, and management criteria for landscaping and irrigation systems in 2017. ELEMENT provided ongoing support to the City through a pilot phase of the program in 2018, which proved to be an invaluable step toward improving the standards with practical experience while earning trust from the public and City leaders. Much of this work was completed through grant funding from the Colorado Water Conservation Board.

Relevance to the Aspen IRP

- › Stakeholder engagement of inter-departmental staff with diverse goals, elected officials, and local businesses.
- › Preparing strategies for an implementation pilot phase and local training programs to engage the public.
- › • Workshops and presentations to City Council to effectively communicate technical information that drives policy decisions.

LONG-TERM CONTROL PLAN ADVISORY GROUP

Camden County Municipal Utilities Authority



PROJECT COMPLETION

June 2016

TEAM INVOLVEMENT

Rob Greenwood, Sarah Shadid

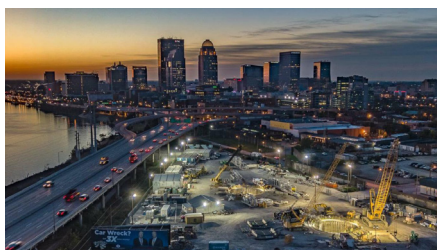
Ross Strategic supported the Camden County Municipal Utility Authority (CCMUA) implement an alternatives analysis method that provides water and wastewater utilities with a framework to incorporate the needs and values of the community into the decision-making process, expand the range of criteria considered to include the economic, social, and environmental benefits that can result from infrastructure investments, and uniformly evaluate the performance of alternatives against otherwise dissimilar metrics. Ross Strategic collaborated with the third-party engineering consultancy to create a scale by which to evaluate the performance of the alternatives as well as determine the estimated performance of each alternative. The identification of community values and translation into measurable objectives and criteria expanded the performance evaluation basis for LTCP alternatives. CCMUA systematically incorporated community sustainability considerations and optimized its infrastructure investments to meet Clean Water Act requirements and community sustainability and quality of life interests. Advisory committee stakeholders fully supported CCMUA's approach to selecting alternatives.

Relevance to the Aspen IRP

- › Used a systematic method to transparently and incorporate community values.
- › Engaged a range of stakeholders in a long-term planning process.
- › Required close collaboration with utility staff and the utility's A&E technical consultant to effectively translate technical planning materials for use with stakeholders.

LONG-TERM WET WEATHER PLAN

Louisville and Jefferson County Metropolitan Sewer District



PROJECT COMPLETION

December 2009

TEAM INVOLVEMENT


























Rob Greenwood

Ross Strategic provided comprehensive multi-stakeholder convening services to the Louisville and Jefferson County Metropolitan Sewer District (MSD) supporting a three-year, multi-stakeholder Wet Weather Team advising MSD on an Integrated Wet Weather Program to address community combined sewer overflow (CSOs) and sanitary sewer overflow (SSOs) problems. The Wet Weather Team consisted of representatives from Louisville Metro Government (the Deputy Mayor and Department Heads from Parks, Land Use, and Public Health), the Louisville Metro Council, local academic institutions (University of Louisville), and business, environmental, public health, neighborhood, and environmental justice advocacy organizations. The WWT completed its work with full consensus support for the Integrated Overflow Abatement Plan submitted by MSD to EPA Region 4, the US Justice Department, and the Kentucky Environmental Protection Cabinet.

Relevance to the Aspen IRP

- › As a consensus based, multi-stakeholder process, the effort required careful navigation through complex issues and divergent needs and interests to reach a final, full consensus agreement in support of an \$832 million, 25-year wet weather plan.
- › MSD asked that the alternatives analysis systematically consider community values (such as environmental stewardship) leading to a stakeholder process and alternatives analysis methodology that identified investments optimized for both for technical merit and community values.

Project Experience Summary

PROJECT	STORAGE/ MAJOR FACILITY SITING	GROUND- WATER RIGHTS	SEPARATE SCOPE AND FEE DEVELOPMENT	UTILITY STAFF ENGAGEMENT	COUNCIL/ COMMUNITY ENGAGEMENT
NON-POTABLE WATER STRATEGIC MASTER PLAN <i>City of Aurora, Colorado</i>					
ONE WATER LA 2040 PLAN <i>City of Los Angeles, California</i>					
INTEGRATED WATER RESOURCES PLAN <i>Otay Water District, California</i>					
2060 STRATEGIC WATER SUPPLY PLAN <i>City of Norman, Oklahoma</i>					
CLEAN WATER PLAN <i>King County, Washington</i>					
WATER SUPPLY PLANNING STUDY <i>City of Santa Barbara, California</i>					
DROUGHT RESPONSE PROGRAM <i>City of Aspen, Colorado</i>					
WATER EFFICIENT LANDSCAPING ORDINANCE, WATER BUDGETS, AND STANDARDS <i>City of Aspen, Colorado</i>					
LONG-TERM CONTROL PLAN ADVISORY GROUP <i>Camden County Municipal Utilities Authority</i>					

OUR TEAM'S SUBCONSULTANTS



ELEMENT Water Consulting was established in 2014 to provide clients with personalized services in the areas of water resources engineering and hydrologic consulting. Our expertise includes surface and ground water rights, water supply analyses, water efficiency and conservation planning including rainwater harvesting, and the management of complex water issues. Some of our previous successes include:

- › **Water Rights:** Maintaining long-term municipal and private clients, experience across multiple river basins, and testifying in water court. Our expert services have assisted clients in complying with new and changing water laws while protecting their water rights.
- › **Water Conservation Planning and Policy:** Providing testimony to the Colorado legislature and assisting in creating ground-breaking new statutes to incentivize water conservation through managing demands and advancing rainwater harvesting.
- › **Water and Land Use:** Helping government create sustainable policy that integrates water and land use plans, making development viable through conserving natural and financial resources. Our integrated plans have saved clients millions of dollars and thousands of acre-feet of water.

Specifically in the area of water supply planning and water rights, we specialize in analyzing and projecting water demands, identifying physical water supplies to meet demands, quantifying project impacts to the river, and developing operational plans that do not result in injury to existing water rights. We work closely with our clients and their legal counsel to develop robust, yet cost-effective, water rights and water supply plans that streamline the complex permitting process, including the Colorado water court system.



ELEMENT Water Consulting

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President

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Ross Strategic works locally, nationally, and internationally to support public institutions, private enterprises, and non-governmental organizations in their efforts to launch, sustain, improve, and evaluate plans, policies, and programs that address complex environmental, natural resource, and public health challenges. These challenges involve a complex mix of societal and multi-disciplinary interests and programmatic and technical complexities. At Ross Strategic we specialize in bridging these interests with highly effective stakeholder engagement strategy and well-designed collaborative processes and cutting through the complexities with integrative analysis to promote responsive and resilient solutions.

Ross Strategic has a long history of providing support to the water sector, including work with national water associations and foundations, US EPA's Office of Water, and drinking water, stormwater, and wastewater utilities throughout the United States. Ross Strategic combines its water sector experience and stakeholder engagement expertise to conduct project efforts across a broad spectrum of water sector topics. At the national level we convene Federal Advisory Groups and other multi-stakeholder forums addressing such water sector topics as all-hazards resilience, contamination warning systems, climate change resilient utilities, Federal nutrient management policy, and contaminants of emerging concern. Locally, we work with individual drinking water, wastewater, and stormwater utilities as they design and execute community engagement processes in support of long-range, strategic, and capital planning efforts. Over our 31-year history, we have built a reputation for responsive, insightful, and well-crafted advice and products, delivered on time, in budget, and that consistently exceed our clients' expectations.



Ross Strategic

Rob Greenwood, PE

Principal

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The background is a solid green color. It is decorated with numerous circles of varying sizes, some of which are outlined in a slightly darker green. A horizontal dotted line in a darker green color is positioned below the main title.

Approach and Process

3 Approach and Process

Project Understanding

Aspen is one of the most iconic communities in the country. Water is of utmost importance to the city's residents and economy, supporting the community's livelihood both directly and indirectly. It plays a critical role in supporting Aspen's recreational facilities and parks, providing amenities for residents and drawing visitors to the mountains in both winter and summer.

The City's existing water supplies from Castle Creek and Maroon Creek have supported the community well over the years. Our "postcard" image of a mountain community like Aspen is one with virtually unlimited water supplies from abundant snowpack feeding pristine streams and creeks. But we know that is not reality. Water stresses are here now – and they will only intensify if we do not plan and act to mitigate them.

Today and tomorrow are different than the past. Clearly, the City of Aspen's system lacks the water storage it needs to reliably meet demands through a range of supply and demand conditions even now – before the impacts of climate change have fully taken hold. An engineering evaluation of gravel pit storage supported the City's purchase of Woody Creek land, a more environmentally-compatible alternative to previously-planned reservoirs on Castle Creek and Maroon Creek with potential for recreational benefits. Subsurface storage also holds promise, with lower evaporative losses, potential water quality advantages, and less disruptive changes to the current landscape.

Risks of unforeseen events – such as last winter's severe avalanche or the potential for a wildfire in the watershed – further

reinforce the value of increasing storage capacity. Now that the City has agreed to move its conditional storage rights, detailed planning is needed to demonstrate how that will be accomplished.

In addition to addressing the City's storage need, the IRP must evaluate other water supply challenges to develop a clear and defensible pathway to a sustainable future. For example, the seasonality of demands in Aspen is changing and climate change is affecting all aspects of water management. Moreover, opportunities for water reuse and alternate sources are also evolving at a rapid pace. The IRP needs to plan and manage water holistically to better coordinate projects, resources, needs, and priorities. Now more than ever, we need to be forward-thinking water managers – focused on water use efficiency, reuse, resiliency, and environmentally-compatible water storage solutions.

Recent years' efforts have helped position the City for increased water reliability and efficiency, including drought planning and ongoing efforts to implement water reuse. The IRP will build on the City's existing work, bringing all elements of water supply planning together for the first time. The Carollo Team recognizes that there is no "one size fits all" strategy for integrated water supply planning. Considering the range of planning strategies prevalent in the industry, and the need to engage a wide spectrum of stakeholders, the IRP will be developed in two phases – visioning and planning in Phase 1, and development of the detailed IRP in Phase 2.



The purpose of Phase 1 is to define the IRP goals, develop a detailed scope of work, and set a strategy for engaging the general public. It is essential to involve other City departments and elected officials in this up-front effort and get this right so the detailed IRP will answer the right questions, support defensible decision making, and can be prepared without surprises or delays. Timing is critical as the City has only six years – since obtaining the Court Decree in May 2019 – to demonstrate that it can and will perfect its conditional storage rights when moving them from Castle Creek and Maroon Creek to a new location once and for all. In other words, the clock is ticking...

The Carollo Team has developed a project approach for Phase 1 – with some optional task ideas – that gets the City ready for a smooth transition into Phase 2. We will deliver the final IRP scope, budget, and schedule by early 2020, so the City can hit the ground running on the preparation of the detailed IRP that will provide a well-supported decision and an implementable plan for much needed water storage.

Project Approach

The Carollo team is purposely structured to provide the right mix of resources, expertise, and Aspen-specific knowledge needed to efficiently but thoroughly complete Phase 1 by January 2020, and smoothly transition into Phase 2 if desired by the City. Team members from both Carollo Engineers, Inc. (Carollo) and Element Water Consulting have worked with you

in the past to develop supporting plans and information. This allows our team to build on the foundation of existing information without having to spend time and budget learning it. Our national team members will add insights from some of the most prominent and progressive IRPs and engagement efforts in the Country, which in turn will help facilitate informed decision-making for how best to develop the Aspen IRP.

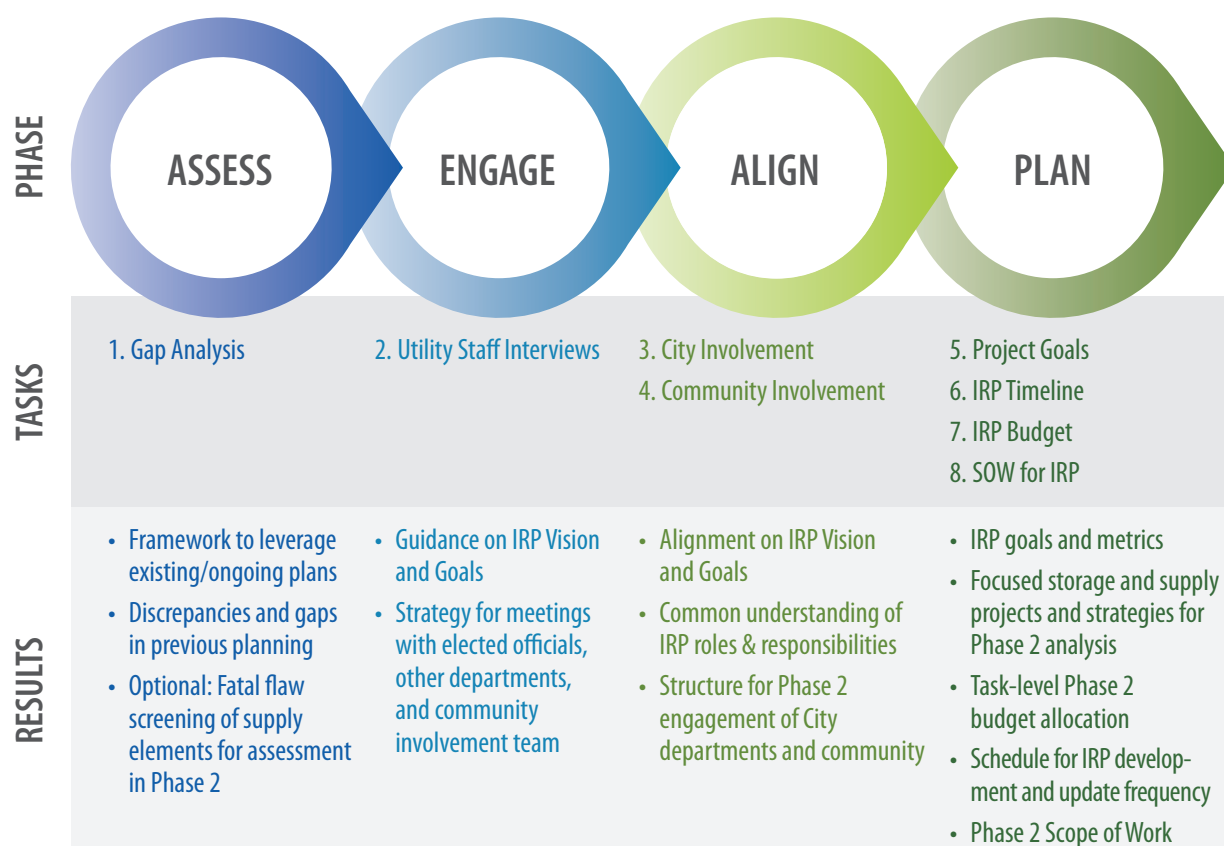
Details on how we plan to leverage the local intuitional knowledge and national expertise for each of our proposed team members is described in Section 2 of this proposal. Our ideas on how we plan to successfully execute and deliver Phase 1 of the IRP to you on-time (see Section 4) and on-budget (see Section 7) is described in subsequent pages.

Carollo's approach for Phase 1 of the IRP brings the following key benefits to the City:

- › Close collaboration throughout four clearly-defined project stages: Assess, Engage, Align, Plan
- › Alignment of diverse perspectives around a common vision for the IRP
- › Applying past work to develop a more focused IRP scope
- › Initiate the formation of an IRP Advisory Group to hit the ground running in Phase 2

Each of these four project approach elements is described below.

Four Key Stages for Phase 1 of the Aspen IRP



1. Close collaboration throughout four clearly-defined project stages: Assess, Engage, Align, Plan

The tasks outlined by the City for developing the Phase 2 scope of work (SOW) follow a logical progression. They clearly emphasize the need to develop internal team collaboration and alignment for the detailed IRP work. We have grouped the tasks into four stages to orient team members as shown in the figure to the left.

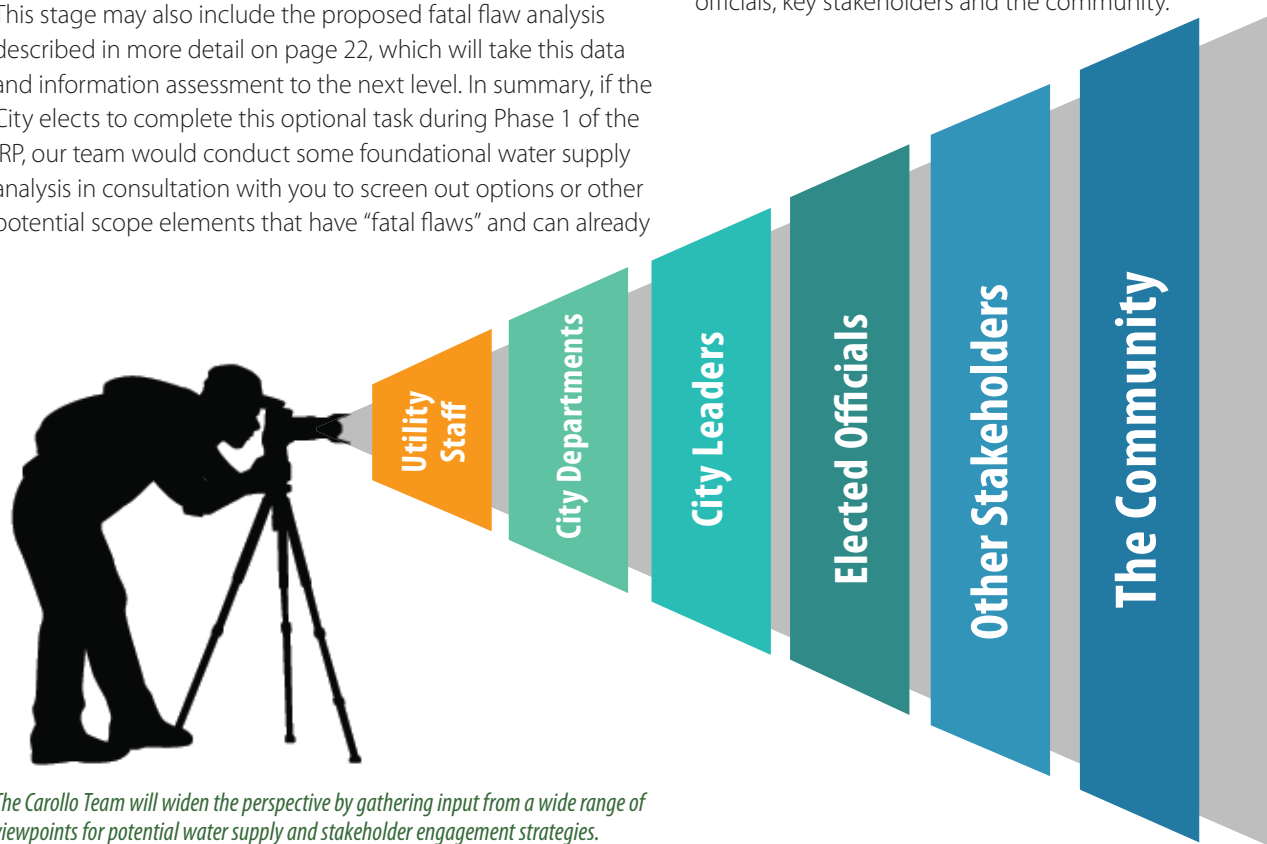
Assess Stage: In the first stage, the Carollo Team will review existing plans and studies to assess the availability of additional data that will be needed for development of the IRP. We will organize existing data sources and reports in a centralized electronic database easily accessible to all team members to efficiently leverage the City's previous pertinent work. Beorn Courtney from Element Water Consulting and her staff will take the lead on the gap analysis as they can efficiently build upon their institutional Aspen-specific knowledge by drawing on their work history with the City and thorough familiarity with the City's previous work related to resources, supply opportunities, and storage options. Based on our review of current reports and documents, we will assess data needs for development of the IRP and identify potential avenues for resolving identified gaps. The findings of the Gap Analysis will be compiled in a draft Summary Report, which will be finalized upon review by City staff within one month after the kickoff meeting. To get the ball rolling quickly on data gathering, we will submit a prioritized data gathering list upon the notice of selection.

This stage may also include the proposed fatal flaw analysis described in more detail on page 22, which will take this data and information assessment to the next level. In summary, if the City elects to complete this optional task during Phase 1 of the IRP, our team would conduct some foundational water supply analysis in consultation with you to screen out options or other potential scope elements that have "fatal flaws" and can already

be eliminated from further study in the IRP. This would result in a more defined and robust scope of work for the IRP and likely expedite the completion of Phase 2.

Engage Stage: A strong IRP process and product hinges on broad participation and support of the proposed recommendations. City utility staff has already researched several strategies for developing the IRP, but wants to widen its perspective by gathering a broader range of viewpoints from City departments, leaders, other stakeholders, and the community. The Phase 1 project provides a crucial opportunity to gather input on the objectives, boundaries, and goals of the IRP before starting the plan.

During this stage, we will first conduct in-person interviews with City Utility staff to gather ideas, concerns, and objectives of the IRP process and final report. Our team will facilitate Webmeeting #1 and prepare for 2 days of interviews to discuss and refine interview questions and coordinate logistics. A broad range of Utility staff, ranging from water operators to management, will be asked for input to guide the initial vision for the IRP. Specific team members will be tasked with leading each segment of the interviews, tailored to the content of each meeting. The interviews will be conducted by project manager John Rehling and planning lead Inge Wiersema. Information gathered from the interviews will be synthesized and presented during Webmeeting #2 in the week following the interviews. This webmeeting will also be used to plan ahead for the workshops to discuss the involvement of other City departments, elected officials, key stakeholders and the community.



The Carollo Team will widen the perspective by gathering input from a wide range of viewpoints for potential water supply and stakeholder engagement strategies.

Project Coordination Webmeetings

- #1 Discuss and Refine Utility Staff Interview Questions
- #2 Present Utility Staff Interview Findings
- #3 Refine City and Community Involvement Ideas
- #4 Present draft deliverables and IRP Goals
- #5 Present and Discuss draft SOW, fee, schedule
- #6 Discuss comments on draft SOW, fee, schedule

As shown in our proposed project schedule (Section 4), we propose to conduct the second set of meetings to develop the City and Community involvement strategies two weeks after the Utility interviews, such that we can incorporate Utility feedback when preparing for the strategy discussions. It is assumed that these strategy development meetings will take place on three consecutive days. John Rehring will then be accompanied by Rob Greenwood from Ross Strategic to have a dialogue about our team's initial ideas on engagement strategies and type of tactics that can be used to effectively involve other City departments, City Leaders, elected officials, and the Community involvement. In the week following the strategy meetings, we present our findings and initial stakeholder engagement strategy recommendations during Webmeeting #3. Subsequently, we will prepare the draft memos describing the City and Community involvement strategies, which will be presented in Webmeeting #4. These memos will be finalized after incorporating City input and used to develop the IRP scope, budget, and schedule as part of Tasks 6 through 8.

Align Stage: In the third stage, we will apply insights garnered from the Assess and Engage stages to develop the IRP goals, aligning the goals around common themes and objectives we gathered in the Engage stage. Rob Greenwood from Ross Strategic will help facilitate the development of the IRP goals and vision. We will conduct an IRP Goals workshop to interactively discuss, confirm, and refine the draft set of goals in conjunction with our Task 5 work.

Plan Stage: Subsequently, details of the IRP timeline, scope, and budget will be developed by Inge Wiersema and Beorn Courtney. This stage will bridge vision and goal-setting and a detailed work plan for the IRP, benefiting from the experiences of other leading utilities and the local-specific knowledge from Carollo and Element Water's prior work with the City. We will work collaboratively with City staff during this process and have assumed two additional Webmeetings (#5 and #6) to discuss comments, before the final timeline, budget, and scope descriptions are delivered mid-January 2020.

2. Alignment of diverse perspectives around a common vision for the IRP

There are many approaches to water supply planning. For example, should the City use scenario planning for this IRP to explore implications of critical uncertainties, or apply traditional methods to plan out how the City will meet demands more reliably? There's no single "right" answer to questions like these. Instead, the Carollo team will work with you to make informed decisions about how to develop the IRP that truly meets your needs. But just as there are many supply planning approaches in the industry, there are likely a diverse range of opinions among the City's staff and leadership.

Phase 1 of the Aspen IRP is an opportunity for developing alignment between the City's various viewpoints and priorities. Our team will succeed by taking the time to ask the right questions of the right people, listening to what they say, and reflecting that input in the IRP goals, vision statement and detailed scope of work for the IRP.

Team members Rob Greenwood and Sarah Shadid from Ross Strategic have a demonstrated track record of gaining consensus around a common vision, drawing from diverse – and sometimes conflicting – viewpoints. They will be called upon primarily in the "Engage" stage (Tasks 2 through 4) and the synthesis of IRP goals in the "Align" stage (Task 5) to engage City staff and elected officials in the development of a common IRP vision. Carollo has worked closely with Rob and Sarah on similar projects with a wide range of stakeholders, such as the King County Clean Water Plan.

Our team has shown its ability to balance loud voices, and to challenge the "silent" voices or unwilling participants. Rob and Sarah have extraordinary talent in integrating disparate positions and viewpoints. This is especially valuable for Phase 1 of the Aspen IRP project. Conversely, an incomplete or ineffective effort to draw out these perspectives could lead to criticism or second-guessing of the process and its results in Phase 2.



Rob Greenwood from Ross Strategic in action with King County to facilitate a productive discussion to gain consensus around a common vision for the Clean Water Project.

We also recognize that some of the most valuable and insightful input comes from those closest to the operation of the system. We will seek support from all levels and facets of the City's organization. For example, we will hold a dedicated input session as part of the Engage stage to gather input from the City's water treatment plant operations staff. Doing so provides insights and ideas that may otherwise not surface, and it actively engages plant staff in supporting the development of the IRP in Phase 2.

In the Engage stage, we will design specific agendas and goals for the utility staff interviews and stakeholder involvement strategy meetings in Aspen. We see our role in these meetings not only as "listener," but as the facilitator that daylights unspoken preferences and conflicting viewpoints. We will actively question participants in reaction to what we heard to drive toward alignment on what the IRP should analyze, what it should yield, and the planning strategies to be employed in the Phase 2 IRP development effort.

This alignment of ideas will be formalized in the IRP Vision Statement, which will provide a robust guide for the entire IRP development process. For example, elements of the vision statements could also be used to develop evaluation criteria and associated metrics to compare supply options in the IRP. The definition of the IRP goals and vision is a critical milestone in Phase 1 to promote clarity and expeditious development of the IRP scope.

We have tentatively reserved the weeks of October 28 and November 11 for this series of meetings. As shown in the table below, we plan to involve different staff for different meetings, drawing on the strengths of each of our team members and the goals for each meeting. Project Manager John Rehring will participate in all meetings to provide continuity and connectivity in the dialogues.

Task	City Participants	Carollo Team	Key Discussion Points and Goals
Week of October 28*			
Task 2: Utility Staff Interviews	Engineering and Planning Utility Management	Inge Wiersema John Rehring	<ul style="list-style-type: none">• IRP vision and goals.• Previous planning.• Existing and planned supplies.• Additional supply options.• Storage risks and opportunities.• Planning strategies: pros/cons.
	Water Treatment and Distribution Operations		<ul style="list-style-type: none">• Existing and planned supply projects.• Additional supply options.• Operational considerations.
Week of November 11*			
Task 3: City Involvement Strategy	City Leaders	Rob Greenwood John Rehring	<ul style="list-style-type: none">• IRP vision and goals.• Priorities for the community.• Supply strategy evaluation criteria.
	City Departments: Parks & Recreation, Open Space, Natural Resources, Environmental Health, Finance, Capital Asset		<ul style="list-style-type: none">• Storage risks and opportunities.• Priorities for the community.• Nontraditional supply opportunities.• Financial implications and priorities.
Task 4: Community Involvement Strategy	Utility Staff	Rob Greenwood John Rehring	<ul style="list-style-type: none">• Community Involvement and Outreach scope elements.
	Community Relations		<ul style="list-style-type: none">• Outreach strategies proven successful for Aspen.• Community priorities.
	IRP Advisory Committee (if formed)		<ul style="list-style-type: none">• IRP vision and goals.• Community priorities.

*Weeks tentatively scheduled based on project schedule shown in section 4.

Using Public Awareness to Improve the IRP Process and Results

The Aspen community is highly engaged in water resource and environmental issues. We know from experience that it is strongly desired to engage the public from the outset to avoid surprises and delays during project implementation in the future. We will develop a tailored community engagement strategy to utilize the community energy to positively contribute to the Aspen IRP process and products throughout both Phase 1 and Phase 2. We also plan to create an opportunity with this project to work with the City's new communications director to gather public input and reflect it in development of the IRP.

Our team brings extensive stakeholder engagement experience from ranging from the general public to elected officials and mayors. Having worked with vocal environmental organizations, such as Heal the Bay in Los Angeles and The Nature Conservancy in Seattle, we understand how to be mindful and sensitive to public interest in siting new storage options, and elected officials' desire to implement the planned water reuse project. Our team will work diligently in this Phase 1 project to align City departments' vision and goals for the IRP, and identify an active community engagement program for Phase 2.

As described on page 23, we have included an optional task to already start the formation of an IRP Advisory Group in Phase 1 to guide the planning effort and vet initial ideas before they are published. The AG could even be convened during Phase 1 to jump-start the IRP process and guide the priorities and engagement strategies during the detailed IRP development in Phase 2.

Among the key issues for the IRP is adding storage for a more reliable community water supply. In the past, some have suggested that adding storage could have negative environmental consequences. With the new sites under consideration, there is the potential to enhance ecosystems – for example, by deliberately timing reservoir releases, or by sustaining waters in aquifers. Our team will work with the City to define the potential environmental benefits and garner public understanding and support for new storage.

3. Applying past work to develop a more focused IRP scope

A successful Aspen IRP will be reflected both in the product – the resulting plan – and the process to develop it. The Carollo team's previous work for Aspen will positively influence both. Because our team members have worked with you to develop drought response plans, water-efficient landscaping standards, and the planned water reuse project, we have a base understanding of what's important to you, what's already been done, and what should be "built in" as baseline assumptions in IRP development versus what should be on the table for further consideration and analysis.

We will apply these insights at two key points in the Phase 1 process:

- › An optional "fatal flaw" analysis in conjunction with Task 1.
- › Shaping the scope of work for the IRP as part of Tasks 5 through 8.

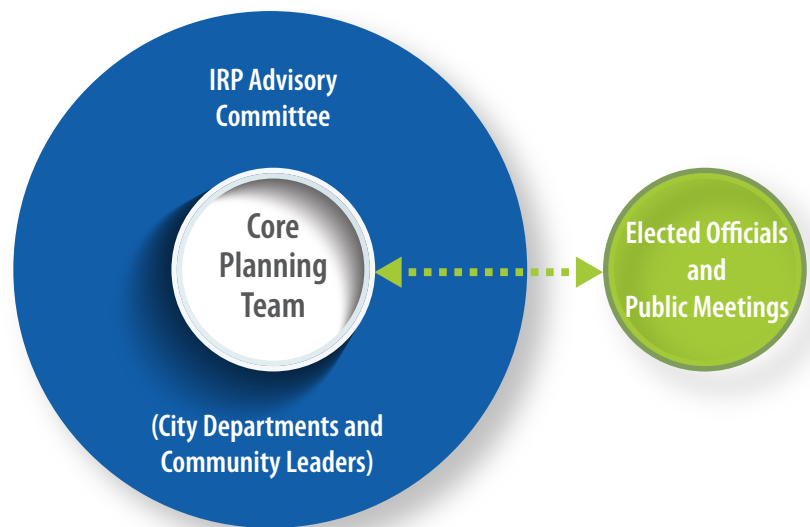
While not called for directly in the RFP, we propose an optional task in conjunction with the Task 1 assessment to critically review water supply concepts. We will use our experience – in Aspen, across Colorado, and nationally – to truth-check the viability of supply options and approaches for implementation in Aspen. We will apply a fatal flaw review of the initial inventory of supply projects and approaches, make recommendations to you for what should not be considered further in the IRP evaluations, and engage in dialogue with you to vet, modify, and adopt our recommendations.

This will help focus the detailed planning effort in Phase 2. Further guidance for the Phase 2 effort will be developed based on our knowledge of previous work and City standards. For example, we will review demand projections and confirm that no update is required in the IRP – or we may recommend adjustments to reflect water efficiency standards and reductions in water use attributable to the reuse project. By conducting some foundational water supply analysis in Phase 1, we may be able to screen out options or other potential scope elements that have "fatal flaws" and can already be eliminated from further study in the IRP. This would result in a more defined and robust scope of work for the IRP and likely expedite the completion of Phase 2.

4. Initiate the formation of an IRP Advisory Group to hit the ground running in Phase 2.

Another idea to complete the project objectives but not specifically mentioned in the RFP is the formation of an IRP Advisory Group (or Steering Committee or Citizens Advisory Committee) in Phase 1 to hit the ground running in Phase 2. The establishment and utilization of an advisory group that would consist of a mix of City representatives and outside stakeholders, including the general public, is highly recommended for projects that likely result in recommendations that could generate media attention and potential opposition. The Aspen IRP clearly fits the profile with the pressure to find water storage sites, either above ground surface water reservoirs or below ground storage.

As the formation of an Advisory Group (or similar) can take substantial time, we have included an optional task in our scope of work to jump start the process in Phase 1. We would facilitate a dedicated meeting to discuss the pros and cons of various Advisory Group formats, configurations, and roles. Then we would help brainstorm on potential participants such that there will be a balanced mix of viewpoints and interests represented in the group. The City would then reach out to these candidates to gauge interest in participating. Depending on the timing of responses, our team could assist in the development of meeting materials for an introduction



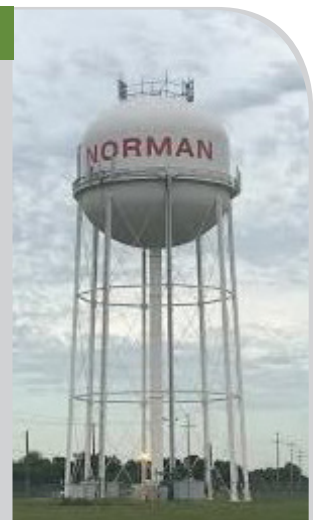
and/or kickoff meeting with the Advisory Group before the end of Phase 1.

By getting an advisory group established before the start of Phase 2, the group will be operational from the kickoff of the IRP development and guide the development of both the plan and the stakeholder involvement from start to finish.

Our team brings many insights from different corners in the country on the challenges and benefits of engaging advisory groups during the development of strategic water plans, such as the “ad hoc” committee that advised the development of the Norman 2060 Strategic Water Supply Plan, the Strategic Planning Group for the One Water LA 2040 Plan, and the Steering Committee for the King County Clean Water Plan. We will leverage these experiences to provide recommendations tailored to the needs of your IRP.

OUR PROCESS IN ACTION - NORMAN, OKLAHOMA

An example where we successfully employed an “ad hoc” committee to advise the development of the Norman 2060 Strategic Water Supply Plan. Formed from interested community members – financial, construction, academic and other perspectives – the Ad Hoc Committee provided direct guidance for development of the plan, and reviewed initial criteria, alternatives, and draft project deliverables before they were taken to the broader public and City Council. Norman’s Ad Hoc Committee helped vet elements of the plan – and shape the ultimate recommendations – before materials were presented to City Council and discussed in the local newspaper and other public forums. We believe the Aspen IRP could benefit from an advisory group, especially with the high degree of public awareness in the Aspen community and sensitivity of storage sites and potential other IRP recommendations. Involving the public early will promote inclusion, transparency, and ultimately public support for the Plan. If the City concurs, our Phase 1 work would include identifying the advisory group role for Phase 2 and initiate the process for selecting committee members. We would also consider convening the group during Phase 1 to initiate the dialogue, if time allows.



Timeline



4 Timeline

Carollo will work interactively with the City to develop the IRP SOW that best fits the City's needs and priorities. While there is no direct schedule driver for completing the IRP, the 6-year schedule for moving the City's conditional storage rights to a new location imparts some degree of urgency to complete the IRP.

We understand that the City is eager to develop a logical, phased, bottom-up IRP that firms up plans for water supply management and supply reliability, in concert with setting a defined course for the conditional storage rights. A thorough but efficient scoping of the IRP in this Phase 1 will provide ample time for integrated supply planning in Phase 2 and the implementation steps to follow.

The Phase 1 timeline on the next page shows how the Carollo team will work interactively with the City to develop a plan for the Phase 2 IRP work by mid-January 2020. All efforts will be geared toward thoughtful development of the scope, budget, and schedule for the detailed evaluation work.

We will initiate the work with a kickoff meeting the week of October 7, which we will schedule upon notice of selection. Task 1 activities will commence immediately, in preparation for the Utility staff meetings to be held the last week of October. Utility staff meetings will help confirm goals and elements of

the Phase 2 work, and allow for coordination and planning of the City Involvement and Community Involvement meetings to follow two weeks later. Input from these meetings will be used to develop the City Involvement strategy memo and the Community Involvement strategy memo, including the recommended approach for community engagement in Phase 2. These efforts will be the foundation for scope, schedule, and budget development in December and January.

A series of six (6) purposeful coordination meetings will serve as checkpoints and formal coordination on project progress, as described in the Approach section and summarized in the timeline below. IRP goals will be discussed and refined as part of Webmeeting #5.

We have scheduled one-week turnaround times for City review of key deliverables, in order to complete the Phase 2 scope by the mid-January target so the Phase 2 work can proceed in early 2020.

ASPEN IRP PHASE 1	2019												2020				
PM AND MEETINGS	OCTOBER				NOVEMBER				DECEMBER				JANUARY				
TASK	7	14	21	28	4	11	18	25	2	9	16	23	30	6	13	20	27
Council Approval of Contract	■ 10/8																
Project Management Activities																	
Project Coordination Webmeetings			● #1		● #2		● #3		● #4		● #5		● #6				
Project Workshops (In-Person)	◆ Kickoff										IRP Goals						
Assess and Analyze: Task 1																	
1.1 Review existing materials and plans.																	
1.2 Conduct gap analysis.																	
1.3 Summary report.			▲ Draft		▲ Final												
1.4 Fatal flaw analysis (optional).							▲ Draft			▲ Final (IRP Boundaries)							
Engage: Tasks 2-4																	
2.1 Prepare for utility staff interviews.																	
2.2 Conduct utility staff interviews.				◆ Staff Interviews (2 days)													
2.3 Synthesize and summarize utility staff interviews.																	
3.1 Prepare City involvement strategy ideas.																	
3.2 Conduct workshops to refine city involvement strategy.						◆ City Involvement Workshop (1 day)											
3.3 Refine City involvement strategy.																	
3.4 Prepare City involvement strategy memo.									▲ Draft		▲ Final						
4.1 Prepare Community involvement strategy ideas.																	
4.2 Conduct workshops to refine Community involvement strategy.						◆ Community Involvement Workshops (2 days)											
4.3 Refine Community involvement strategy.																	
4.4 Prepare Community involvement strategy memo.									▲ Draft		▲ Final						
Align: Task 5																	
5 Develop objectives and goals for the IRP.									▲ Draft		▲ Final						
Plan: Tasks 6-8																	
6 Develop IRP process timeline.											▲ Basic		▲ Draft		▲ Final		
7 Develop IRP budget.											▲ Rough LOE		▲ Draft		▲ Final		
8 Develop Phase 2 Scope of Work.											▲ Outline		▲ Draft		▲ Final		

LEGEND	
	Carollo Team Activity
	City Review of Draft Deliverable
●	Webmeetings/Conference Calls
◆	Project Meetings/Workshops
▲	Initial Development
▲	Draft Deliverables
▲	Final Deliverables
■	Contract Approval

MEETING PURPOSE

Project Coordination Webmeetings:

- 1) Discuss and Refine Utility Staff Interview Questions.
- 2) Present Utility Staff Interview Findings.
- 3) Refine City and Community Involvement Ideas.
- 4) Present draft deliverables.
- 5) Discuss and develop IRP goals.
- 6) Present and Discuss draft SOW, fee, schedule.

Project Kickoff Workshop

- › Kickoff: Establish City expectations, communications protocols, and review data request list



Corporate Commitment

5 Corporate Commitment

August 30, 2019

It takes corporate commitment to keep high-caliber talent engaged and focused throughout the process to deliver a successful project. As the highest-ranked national company specializing in water Carollo continuously executes a high volume of work across a wide range of disciplines.

We understand that you want to work directly with the individuals that are highlighted in this proposal. They are the people that took the initiative to explore and understand the City's goals and needs for this project in anticipation of this proposal. And they are the same people that you want to see and work with in Aspen.

One of the unique benefits of working with Carollo is the dedication and passion of our senior staff. Our culture is one of hands-on involvement at all staff levels. It's not unusual to see our most seasoned staff members in a filter bed examining media when planning out a treatment plant design, or leading the discussion at an internal or external stakeholder meeting. And we see the same passion in our partner firms for this project, demonstrated through their previous work for Aspen and our past experience working together as teammates.

The people shown on the organizational chart are the people that will be supporting you throughout the Phase 1 project – and Phase 2, if we are selected to continue our services through the detailed IRP planning. They are the same people that you'll see at the Phase 1 meetings in Aspen this fall.

As a vice president of Carollo, I have the authority to direct the resources of the firm, and participate regularly in allocating staff members' time to project assignments. I commit the proposed Carollo team members to the work described in this proposal, and have received a similar commitment from Element Water and Ross Strategic for their staff.

Our firms have identified this project as a high-priority commitment – a commitment we have been building toward for over the past year. As a result, we have reserved ample capacity to respond to your Phase 1 planning needs. All proposed staff members have the availability to meet project needs, and we will tap staff resources to augment our execution of this project as needs dictate.

Carollo has one of the lowest staff turnover rates in the water consulting industry. Should a key staff member become unable to work on the project, I will take the lead in working with our resource management team to identify a qualified candidate to replace their role. After completing internal verification of the replacement candidate's skill set and availability, I will share the proposed staff member's qualifications with the City's Project Manager. I will also facilitate a discussion with the proposed staff member, giving the City the opportunity to explore questions and background that is not easily conveyed in written format. Upon the City's concurrence, I will then integrate the new staff member into the project activities. Time associated with transitioning to a replacement staff member will not be charged to the project.

My confidence in committing this team to this project is reinforced by Carollo's corporate commitment to Aspen – and more directly, by the passion and interest demonstrated by each team member in preparing for this proposal and the upcoming planning work. We look forward to getting underway!



John Rehring, P.E.
Senior Project Manager | Vice President

References



6 References

Carollo is known for the large number of clients with whom we have maintained long-term relationships. Our experience shows that open communication, collaboration, and coordination build trust, minimize conflict, and eliminate surprises. Our references will attest to our level of service and responsiveness on similar projects.



One Water LA, 2019

LA Sanitation

Lenise Marrero

Senior Civil Engineer

P | 323-342-6210

E | lenise.marrero@lacity.org



Clean Water Plan, 2018

King County, Washington

Steve Tolzman

Role

P | 206-477-5459

E | Steve.Tolzman@kingcounty.gov



Water Supply Planning Study, 2009

City of Santa Barbara

Cathy Taylor

Water System Manager

P | 805-564-5467

E | CTaylor@SantaBarbaraCA.gov



Integrated Resources Plan, 2016

Otay Water District

Rod Posada

Chief Engineer

P | 619-670-2293

E | rodp@otywater.gov



Non-Potable Water Strategic Plan, 2019

City of Aurora

Alicia DuPree

Project Manager

P | 303-739-7499

E | adupree@auroragov.org



2060 Strategic Water Supply Plan, 2014

City of Norman

Chris Mattingly

Capital Projects Engineer

P | 405-217-7778

E | Chris.Mattingly@NormanOK.gov



Water Efficient Landscaping Ordinance, Water Budgets, and Standards, Ongoing

City of Aspen

Lee Ledesma

Utilities Finance and Administrative

Services Manager

P | 970-429-1975

E | Lee.Ledesma@cityofaspen.com



Drought Response Program, 2019

City of Aspen

Margaret Medellin

Utilities Portfolio Manager

P | 970-429-1992

E | Margaret.Medellin@cityofaspen.com



Long-Term Control Plan Advisory, 2016Camden County Municipal Utilities Authority

Andy Kricun

Executive Director

P | 856-583-1223

E | andy@ccmua.org



Reference for Rob Greenwood

J. Alan Roberson, P.E.

Executive Director

Association of State Drinking Water

Administrators (ASDWA)

P | 703-812-9507

E | aroberson@asdwa.org

Fee Proposal



7

Fee Proposal

The proposed fee for the Carollo team to complete the IRP Phase 1 services described in the project approach and accompanying scope of work is detailed in the table on the next page. This fee proposal reflects the services requested by the City in the request for proposals, and adds value for both Phases 1 and 2 through the deliberate approach to sequencing the work in Phase 1 and focusing the Phase 2 work effort. With our team executing the proposed approach, you will have a well-vetted scope of work and plan for efficiently developing the detailed IRP in Phase 2.

All base scope of work tasks are included in this fee proposal. Optional tasks (such as the Task 1 fatal flaw analysis) are not included in the proposed fee. Should the City elect to proceed with one or more optional tasks, they will be scoped based on an interactive dialogue with the City to refine their scope and then costed accordingly.

We have not included a set contingency in our proposed fee, leaving that to the City's discretion for contracting purposes. Our experience on other supply planning efforts suggests that a contingency between 10 and 20 percent of the total fee provides an appropriate amount of flexibility for the City's project manager to exercise in the event that unscoped work is desired through the course of project execution. Our proposed rate schedule is included after the Fee Proposal table, detailing the rates for labor and expenses associated with this project.

We appreciate the City's consideration of this proposal, and stand ready to discuss modifications to the scope and fee to best meet the City's needs for this project.

CITY OF ASPEN INTEGRATED RESOURCE PLAN PHASE 1 AUGUST 2019		CAROLLO LABOR		SUBCONSULTANT: ELEMENT WATER CONSULTING				SUBCONSULTANT: ROSS STRATEGIC				SUB TOTAL	CAROLLO DIRECT EXPENSES				TOTAL COST
TASK ⁽¹⁾		CAROLLO LABOR HOURS	CAROLLO LABOR COSTS	LABOR HOURS	LABOR COSTS	OTHER DIRECT COSTS	TASK FEE	LABOR HOURS	LABOR COSTS	OTHER DIRECT COSTS	TASK FEE		SUBS INVOICING MARKUP 10%	TRAVEL AND OTHER DIRECT COSTS	PECE ON CAROLLO DL HRS \$12.00	TOTAL EXPENSES	
Task 1: Gap Analysis																	
	subtotal: hours	13		28				0			-						
	SUBTOTAL: COSTS		\$2,942		\$4,640	\$0	\$4,640		\$0	\$0	\$0	\$4,640	\$464	\$0	\$156	\$620	\$8,202
Task 2: Utility Staff Interviews																	
	subtotal: hours	50		0				0									
	SUBTOTAL: COSTS		\$12,192		\$0	\$0	\$0		\$0	\$0	\$0	\$0	\$0	\$2,800	\$600	\$3,400	\$15,592
Task 3: City Involvement																	
	subtotal: hours	21		0				20									
	SUBTOTAL: COSTS		\$4,942		\$0	\$0	\$0		\$5,120	\$1,000	\$6,120	\$6,120	\$612	\$1,600	\$252	\$2,464	\$13,526
Task 4: Community Involvement																	
	subtotal: hours	29		0				34									
	SUBTOTAL: COSTS		\$6,942		\$0	\$0	\$0		\$8,704	\$1,000	\$9,704	\$9,704	\$970	\$0	\$348	\$1,318	\$17,964
Task 5: Develop Project Goals for IRP process																	
	subtotal: hours	12		2				8									
	SUBTOTAL: COSTS		\$3,000		\$370	\$0	\$370		\$1,440	\$0	\$1,440	\$1,810	\$181	\$0	\$144	\$325	\$5,135
Task 6: Develop timeline for IRP process																	
	subtotal: hours	8		2				0									
	SUBTOTAL: COSTS		\$2,000		\$370	\$0	\$370		\$0	\$0	\$0	\$370	\$37	\$0	\$96	\$133	\$2,503
Task 7: Develop budget for IRP process																	
	subtotal: hours	12		4				0									
	SUBTOTAL: COSTS		\$3,000		\$740	\$0	\$740		\$0	\$0	\$0	\$740	\$74	\$0	\$144	\$218	\$3,958
Task 8: Develop SOW for IRP																	
	subtotal: hours	22		4				0									
	SUBTOTAL: COSTS		\$5,192		\$740	\$0	\$740		\$0	\$0	\$0	\$740	\$74	\$0	\$264	\$338	\$6,270
Task 9 - Project Management and Meetings																	
	subtotal: hours	62		16				8									
	SUBTOTAL: COSTS		\$15,192		\$2,960	\$600	\$3,560		\$2,048	\$0	\$2,048	\$5,608	\$561	\$1,200	\$744	\$2,505	\$23,305
TOTAL LEVEL OF EFFORT: LABOR HOURS		229		56				70									
TOTAL COST OF SERVICES			\$55,402		\$9,820	\$600	\$10,420		\$17,312	\$2,000	\$19,312	\$29,732	\$2,973	\$5,600	\$2,748	\$11,321	\$96,455

Notes:
1. Does not include budget for tasks listed as optional in the Scope of Work.
2. Work will be invoiced monthly based on percent complete of each major task.

CAROLLO ENGINEERS, INC.

SPECIAL FEE SCHEDULE

CITY OF ASPEN

INTEGRATED RESOURCE PLAN PHASE 1 SERVICES

Engineers/Scientists

Assistant Professional I	\$135.00
Assistant Professional II	150.00
Professional	175.00
Project Professional	205.00
Lead Project Professional	225.00
Senior Professional	250.00
Senior Specialist	265.00

Technicians

Technicians	115.00
Senior Technicians	160.00
Senior Designer	212.00

Support Staff

Document Processing / Clerical	102.00
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Project Equipment and Communication Expense

Per Direct Labor Hour	\$12.00
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Other Direct Expenses

Mileage	IRS Rate at time of services
Travel and subsistence	At cost
Subconsultants	Cost + 10%
Other Direct Costs	At cost
Expert Witness	2.0 x Standard Hourly Rates

ELEMENT WATER CONSULTING, INC.

2019 FEE SCHEDULE

Position	Hourly Rate
Senior Project Manager	\$185.00
Project Manager	\$170.00
Senior Engineer/Hydrologist	\$155.00
Staff Engineer/Hydrologist	\$110.00
Administrative	\$65.00

The above hourly rates include indirect expenses. Reimbursable expenses for travel, including airfare, automobile rental, mileage at the then-current Internal Revenue Service standard mileage rate, lodging, etc. are billed at cost. Sub-consultants to ELEMENT are billed at cost plus five percent.

Ross Strategic
SPECIAL FEE SCHEDULE
CITY OF ASPEN
INTEGRATED RESOURCE PLAN PHASE 1 SERVICES

Consultants

Research Associate	78.00
Consultant	104.00
Sr. Consultant	256.00

Support Staff

Document Processing / Clerical	92.00
Contract/Fiscal Management	108.00
Web/Graphics	111.00

Other Direct Expenses

Mileage	IRS Rate at time of services
Travel and subsistence	At cost
Subconsultants	Cost +5%
Other Direct Costs	At cost

Appendix



Appendix: Scope of Work

SCOPE OF WORK

City of Aspen: Aspen Water Integrated Resource Plan Strategic Consulting Services – Phase One

Carollo Engineers, Inc.

Task 1 – Gap Analysis

1.1 Review Existing Materials and Plans

- › Request and compile relevant studies and reports related to Aspen's existing water supply, historical water demands, land use, and existing water facilities
- › Request and compile relevant studies and reports related to Aspen's future water demand projections, water supply and storage options.
- › Review materials and compile an electronic project library of reference material.

1.2 Conduct Gap Analysis

- › Prepare list of IRP project components and associated data needs.
- › Identify gaps in planning or data that will be important for development of detailed IRP planning in Phase 2.

1.3 Summary Report

- › Develop brief summary report synthesizing status and conclusions of previous water planning and identified planning or data gaps
- › Summarize additional data needs and recommended studies.

1.4 Fatal Flaw Analysis (Optional)

- › Develop an initial list of water supply and storage options that could be considered in the IRP
- › Discuss components with City staff and create a tabulation of pros and cons of the water supply and storage options
- › Develop screening criteria to conduct "fatal flaws" analysis to identify options that would preclude practical implementation or are clearly less viable than other options.
- › Use web meetings included in Task 9. to discuss initial list of options, screening criteria, and proposed list of options to be removed from further consideration in Phase 2.

Assumptions:

- › City will provide all relevant reports electronically to Carollo.
- › Budgeted time includes compilation of available reports and studies and review of up to 6 reports not previously reviewed by Carollo team members.

Deliverables:

- › Electronic web-based reference materials library, accessible to all team members.
- › Brief summary report synthesizing status and conclusions of previous water planning and identified planning or data gaps.
- › Optional: List of options to be removed from further consideration in Phase 2.

Task 2 – Utility Staff Interviews

2.1 Prepare for Utility Staff Interviews

- › Develop agendas and goals for up to 2 days of meetings with Utility staff.
- › Develop draft interview questions and discuss/refine these during Webmeeting #1.

2.2 Conduct Utility Staff Interviews

- › Meet with Utility staff in Aspen for 2 days to discuss supply options, IRP planning process, goals, and desired outcomes.
- › Solicit input from utility staff via meetings on content, goals, and priorities for Task 3 and 4 meetings with elected officials, other City departments, and Community Involvement team.
- › Initiate dialogue regarding approaches for Phase 2 community engagement, in advance of Task 4 Community Involvement meetings.

2.3 Synthesize and Summarize Utility Staff Interviews

- › Synthesize input received during interviews and present findings in Webmeeting #2
- › Prepare a brief project memorandum summarizing Utility goals and drivers for IRP planning, and preliminary list of supply and storage options to be investigated in Phase 2.

Assumptions:

- › Two consecutive days of meetings in Aspen.

Deliverables:

- › Brief project memorandum summarizing Utility vision and input, including matrix of long-term water supply ideas.

Task 3 – City Involvement

3.1 Prepare City Involvement Strategy Ideas

- › Develop ideas for City involvement during the IRP Phase 2.
- › Develop key questions to be answered by elected officials and other City departments.
- › Develop agendas and goals for meetings with City representatives
- › Review and discuss plans for City Involvement meetings during Webmeeting #2.

3.2 Conduct Workshops to Refine City Involvement Strategy

- › Meet with elected officials, City leaders, and staff of other City departments in Aspen to solicit input on the involvement of City staff during the IRP planning process.

3.3 Refine City Involvement Strategy

- › Refine City involvement approach for Phase 2 based on input received in City involvement workshops.

3.4 Prepare City Involvement Strategy Memo

- › Develop and submit a draft project memorandum summarizing proposed City involvement strategy for Phase 2.
- › Review and discuss comments during Webmeeting #5 and finalize project memorandum.

Assumptions:

- › One day of meetings in Aspen, held on consecutive day with Task 4 meetings.

Deliverables:

- › Draft and final project memorandum summarizing City involvement strategy.

Task 4 – Community Involvement

4.1 Prepare Community Involvement Strategy Ideas

- › Develop ideas for Community involvement during the IRP Phase 2.
- › Develop key questions to be discussed with Community Relations and other City staff in onsite meetings.

- › Develop agenda and goals for meetings to discuss the draft approach for community engagement in Phase 2.
- › Review and discuss plans for upcoming Community Relations meetings during Webmeeting #2.

4.2 Conduct Workshops to Refine Community Involvement Strategy

- › Meet with City Community Relations staff and other City representatives to review draft approach, further develop ideas and strategy for community engagement approach and, discuss a strawman outreach scope of work for Phase 2.
- › Hold a second day of meetings to review the strawman outreach scope and discuss specific goals, tactics, and organizational capabilities and responsibilities for the Phase 2 outreach scope.

4.3 Refine Community Involvement Strategy

- › Refine community involvement approach for Phase 2 and develop a draft scope of work based on input received in City involvement workshops.
- › Discuss revisions to draft scope of work during Webmeeting #3.

4.4 Prepare City Involvement Strategy Memo

- › Develop and submit a Draft project memorandum summarizing proposed City involvement strategy and contract-ready community involvement scope for Phase 2.
- › Review and discuss comments during Webmeeting #5 and finalize project memorandum.

4.5 Identify IRP Advisory Committee Members and Committee Goals (Optional)

- › In close coordination with City Utility and Community Relations staff, identify the types of organizational representation desired for an IRP Advisory Committee (IRPAC), comprising City staff and thought leaders/key representatives from the community at large, to serve in an advisory role for Phase 2. The IRPAC would provide guidance and serve in an advisory role representing a balance mix of viewpoints and interests for the Phase 2 planning team.
- › Work with City staff to identify specific organizations and individuals that provide the desired representation, and initiate outreach to invite them to participate on the IRPAC.
- › Assist in the preparation of a letter to reach out to potential IRPAC members to gauge their interest, including a description of the roles and responsibilities, expected time commitment, and project duration.
- › Assist in the preparation of materials for an IRPAC introduction meeting, and potentially attend/facilitate this meeting depending on progress of IRPAC formation during Phase 1.
- › Integrate the goals and representation for the IRPAC as an additional section in the Task 4 project memorandum.

Assumptions:

- › Two days of meetings in Aspen, held on consecutive days with Task 4 meetings.

Deliverables:

- › Draft and final project memorandum summarizing community involvement strategy and scope of work for Phase 2 community involvement.

Task 5 – Develop Objectives and Goals for IRP Process

5.1 Develop Project Goals and Objectives

- › Drawing on the work of preceding tasks, develop a synthesized list of potential goals for the IRP and desired outcomes.
- › Submit bulleted list of draft goals, annotated as necessary, for review and consideration by City Utility staff.
- › Review and refine Phase 2 goals and desired outcomes in Webmeeting #4.
- › Submit revised description of IRP objectives and goals to City.

5.2 Prepare IRP Vision Statement (Optional)

- › Prepare Draft vision statement for the Aspen IRP.
- › Review and refine Vision Statement in Webmeeting #4.
- › Submit revised IRP vision statement to City.

Assumptions:

- › List of goals and outcomes will be developed based on input from previous tasks.

Deliverables:

- › Draft and final list of objectives, goals, and outcomes for Phase 2 of IRP development.

Task 6 – Develop Timeline for IRP Process

6.1 Develop IRP Process Timeline

- › Prepare basic IRP timeline in direct coordination with Task 7 activities and in light of the previously-developed Community Engagement scope of work and discuss in Webmeeting #5
- › Prepare a more refined draft task list and timeline for IRP development.
- › Submit draft timeline to City.
- › Present and discuss the task list and timeline during Webmeeting #6.
- › Revise and submit final task list and timeline to City.

Assumptions:

- › Timeline and list of Phase 2 tasks will be developed based on Carollo team experience in developing IRPs, as guided by input from previous tasks and City's expressed schedule drivers.
- › Tasks 6, 7, and 8 will be conducted concurrently to synchronize the recommended timeline, budget, and scope for Phase 2.

Deliverables:

- › Draft and final list of objectives, goals, and outcomes for Phase 2 of IRP development.

Task 7 – Develop Budget for IRP Process

7.1 Develop IRP Budget

- › Prepare rough level of effort (LOE) in direct coordination with Task 6 activities and in light of the previously-developed Community Engagement scope of work and discuss in Webmeeting #5
- › Develop a draft planning-level budget for IRP development and submit to City.
- › Present and discuss the draft budget and basis for the budget during Webmeeting #6
- › Revise and submit final budget to City.

Assumptions:

- › Budget will be developed based on Carollo team experience in developing IRPs, as guided by input from previous tasks and City's expressed budgetary limitations.
- › Tasks 6, 7, and 8 will be conducted concurrently to synchronize the recommended timeline, budget, and scope for Phase 2.

Deliverables:

- › Draft and final task-level budget for Phase 2 of IRP development.

Task 8 – Develop Scope of Work for IRP

8.1 Develop Phase 2 Scope of Work

- › Use the outline of Phase 2 tasks from Task 6 and Carollo team's previous experience as the basis for developing a draft of a detailed scope of work for Phase 2, including the Community Involvement scope from Task 4.
- › Submit the draft scope for City review. Anticipated components include:
 - Project Goals
 - IRP strategy and approach
 - Data Needs
 - Community Outreach Goals
 - Timeline

- › Prepare a draft SOW outline and discuss in Webmeeting #5
- › Incorporate comments and prepare a draft version of the detailed SOW.
- › Present and discuss draft SOW during Webmeeting #6
- › Revise and submit final detailed scope of work to City.

Assumptions:

- › Scope will be developed based on Carollo team experience in developing IRPs, as guided by input from previous tasks and reflecting the timeline and budget developed in Tasks 6 and 7.
- › • Tasks 6, 7, and 8 will be conducted concurrently to synchronize the recommended timeline, budget, and scope for Phase 2.

Deliverables:

- › • Scope outline; draft and final detailed scope of work for Phase 2 of IRP development.

› Task 9 – Project Management and Meetings

9.1 Project Management Activities

- › Project staffing and budget management, including subconsultant management and coordination.
- › Develop and submit up to five monthly progress report to accompany monthly invoices, summarizing project activity for the reporting month and identifying any scope, schedule, or budget issues and proposed resolution.

9.2 Project Workshops

- › Workshop #1: Conduct a project Kickoff Workshop in Aspen. Workshop will be used to establish City expectations, communication protocols, and review data request list.
- › Workshop #2(Optional): In lieu of using Webmeeting #5, conduct an in-person IRP Goals Workshop in Aspen as a transition point from Task 5 goal-setting into Task 6 through 8 detailed scope of work development. Workshop discussion will be used to gain alignment of input from interviews and strategize on ideas to define IRP goals; and to discuss IRP Phase 2 schedule, budget, and scope of work outline.

9.3 Project Coordination Webmeetings

- › Conduct a series of six project coordination webmeetings. Preliminary focus for each meeting includes:
 - 1) Discuss and Refine Utility Staff Interview Questions
 - 2) Present Utility Staff Interview Findings
 - 3) Refine City and Community Involvement Ideas
 - 4) Present draft deliverables and define IRP Goals
 - 5) Present and Discuss draft Phase 2 scope of work, budget, and schedule
 - 6) Discuss comments on draft Phase 2 scope of work, budget, and schedule

Assumptions:

- › Workshops: One full day in Aspen for project manager; some team members may participate remotely, reducing costs and environmental impacts.
- › Webmeetings: Carollo will host all Webmeetings of approximately 1-2 hours each.

Deliverables:

- › Monthly progress reports (up to 4)
- › Meeting agendas and summaries for all workshops

Meeting agendas and summary of action and decision items for all Webmeetings

Project Assumptions

- › Third Parties. The services to be performed by the Professional are intended solely for the benefit of the City. No person or entity not a signatory to this Agreement shall be entitled to rely on the Professional's performance of its services hereunder, and no right to assert a claim against the Professional by assignment of indemnity rights or otherwise shall accrue to a third party as a result of this Agreement or the performance of the Professional's services hereunder.
- › Standard of Care. The Professional shall complete the services required hereunder in accordance with the prevailing engineering standard of care by exercising the skill and ability ordinarily required of engineers performing the same or similar services, under the same or similar circumstances, in the State of Colorado.
- › City-Provided Information and Services. The City shall furnish the Professional available studies, reports and other data pertinent to the Professional's services; obtain or authorize the Professional to obtain or provide additional reports and data as required; furnish to the Professional services of others required for the performance of the Professional's services hereunder, and the Professional shall be entitled to use and rely upon all such information and services provided by the City or others in performing the Professional's services under this Agreement.
- › Estimates and Projections. The Professional has no control over the cost of labor, materials, equipment or services furnished by others, over the incoming water quality and/or quantity, or over the way the City's plant and/or associated processes are operated and/or maintained. Data projections and estimates are based on the Professional's opinion based on experience and judgment. The Professional cannot and does not guarantee that actual costs and/or quantities realized will not vary from the data projections and estimates prepared by the Professional and the Professional will not be liable to and/or indemnify the City and/or any third party related to any inconsistencies between the Professional's data projections and estimates and actual costs and/or quantities realized by the City and/or any third party in the future.



John P. Rehring, P.E.

John Rehring is a vice president and client service manager with a career specializing in water supply planning and infrastructure. His experience ranges from regional water supply and infrastructure planning to local water, wastewater, and reuse design and construction. Relevant projects include:

Education

MS Civil Engineering,
University of Colorado,
Boulder, 1994

BS Chemical Engineering,
University of Wisconsin,
Madison, 1989

Licenses

Professional Engineer,
Colorado, New Mexico,
Oklahoma

Professional Affiliations

American Water Works
Association

Rocky Mountain Water
Environment Association
(Past President)

Rocky Mountain Water
Environment Association/
American Water Works
Association Water Reuse
Committee (Past Chair)

Water Environment
Federation

WaterReuse Association
(Colorado Section Past
President, Colorado
Section Trustee)

Relevant Experience

→ Technical advisor for the City of Aspen, Colorado, Water Reuse Program Planning. Advised the City on reuse regulations and strategies for implementing a water reuse project for golf course and multi-family residential property irrigation. Considered the engineering, permitting, and legal impacts on costs and schedule for both reclaimed water and raw water diversion approaches.

→ Project manager for the City of Norman, Oklahoma, 2060 Strategic Water Supply Plan. Screened individual supply, reuse, and infrastructure options, followed by a detailed evaluation of 14 supply portfolios. Used a multi-objective weighted criteria model to support facilitated dialogue and City Council/public meetings. Provided support for ultimate selection of a portfolio that includes indirect potable reuse through surface water augmentation, enhanced conservation, and additional groundwater wells.

→ Project manager for the City of Santa Fe, New Mexico, Long-Range Water Supply Plan Update. Assessed the degree to which water reuse strategies can mitigate projected water supply shortages, exacerbated by projected climate change conditions. Assessed supplemental water supply strategies to augment increased reuse to close projected supply/demand gaps.

→ Project manager for the City of Aurora, Colorado, Non-Potable Water Strategic Plan. Considered innovative ways of cost-effectively using available raw water and reclaimed water resources, packaged into a series of alternatives to serve existing demands and future parks/open space, commercial, and industrial demands through 2070. Developed a phased CIP after selecting the preferred approach via a multi-criteria decision support process with a wide range of city stakeholders.

→ Project manager for the Grand River Comprehensive Water Plan, a collaborative

effort of the Grand River Dam Authority, US Army Corps of Engineers, and Oklahoma Water Resources Board. Evaluated multi-reservoir management strategies for water supply, hydropower, recreational, and environmental purposes.

→ Project manager for the WaterReuse Colorado, Direct Potable Reuse Project. Used a facilitated workgroup process and worked directly with Colorado regulators to establish a regulatory framework for the state. Engaged industry-leading experts to develop messaging and outreach materials to enhance public support for DPR. Expanded planning tools to support utilities' consideration of potable reuse options.

→ Project manager for the PureWater Colorado, Direct Potable Reuse Demonstration. Led the development of a non-RO DPR pilot in Denver. Oversaw engineering of the pilot and gave tours of the 5-step process used to produce purified water, which in turn was used for sampling onsite and to make beer and wine to further support DPR outreach.

→ Project manager for the City of Santa Fe, New Mexico, Water Reuse Feasibility Study. Used participatory decision-making processes and decision support tools to evaluate alternatives for optimizing use of recycled water supplies under a Bureau of Reclamation funding agreement. Alternatives included expanded non-potable reuse, indirect potable reuse through various aquifer recharge and streamflow augmentation options, and direct potable reuse.

→ Project manager for the City of Cedar City, Utah, Water Reuse Feasibility Study. Led the detailed evaluation of agricultural irrigation and aquifer recharge alternatives to reduce groundwater mining. Led meetings with a regional planning group, and confirmed findings and recommendations through a series of City Council meetings.

Awards

WaterReuse Colorado
Person of the Year
Award, WaterReuse
Association, 2014

Arthur Sidney Bedell
Award, Water
Environment Federation,
2013

Select Society of Sanitary
Sludge Shovelers, Rocky
Mountain Water
Environment Association,
2006

President's Award,
WaterReuse Association,
2005

John P. Rehring, P.E.

→ Project advisor and facilitator for the South Platte Water Renewal Partners, Colorado, SWIFT Project. Led interactive workshops between major Denver water and wastewater utilities to explore potential infrastructure-sharing opportunities along the urban South Platte River corridor.

→ Project manager for the City of Santa Fe, New Mexico, Preliminary Design Evaluation for Reuse Pipeline from Paseo Real WWTP to the Rio Grande. Led engineering and hydraulic modeling analyses of existing pipelines to determine their utility in conveying reclaimed water to the Rio Grande for exchange-based reuse versus constructing a new pipeline and pump station. Oversaw an investigation of permitting needs.

→ Project manager for the City of Norman, Oklahoma, Groundwater Well Field Development Project. Used aquifer mapping, water quality data, and GIS analyses to identify 45 potential well sites. Facilitated the use of advanced hydraulic modeling technologies to optimize well siting based on infrastructure cost, water quality, and yield. Designed a test well program to confirm sites with adequate water quality and yield to achieve an additional 2 mgd of water supply.

→ Lead author, American Water Works Association, Water Resources Planning Manual M50. Prepared two chapters of the third edition of this reference publication.

→ Project engineer and advisor for the City of Edmond, Oklahoma, Water and Wastewater Master Plan. Developed and analyzed water supply, conservation, and indirect potable reuse alternatives to optimize costs and reliability, and provided review of comprehensive capital improvement plans for water treatment and distribution and wastewater collection and treatment.

→ Project advisor for the City of Aurora, Colorado, Southeast Aurora Non-potable Water System Expansion Study. Analyzed routing and infrastructure alternatives to convert two golf courses and several parks and schools from potable water to untreated raw water for irrigation uses. The recommended booster pump station and pipeline will help reduce operational costs and stretch Aurora's potable water supplies.

→ Technical advisor and alternatives evaluation lead for the Arapahoe County Water and Wastewater Authority, Colorado, Source Use and Distribution Plan. Evaluated alternate ways of managing multiple treated water sources to meet level of service goals and consistent aesthetic quality throughout the distribution system.

→ Project manager and lead facilitator for the Oklahoma Water Resources Board, Oklahoma, Instream Flow Advisory Group. Provided technical input and facilitated Advisory Group workshops with representation from diverse water interests to identify a path forward for pilot testing of potential instream flow protocol in eastern Oklahoma. Facilitated a series of public/stakeholder meetings in the Upper Illinois River watershed as part of the instream flow pilot study.

→ Project manager for the Denver Water, Colorado, Recycled Water Demand Management Study. Evaluated traditional and innovative approaches for increasing winter recycled water demand to increase utilization of available recycled water supplies and to improve winter operations of the Recycling Plant's biologically-active filters. In a related task, evaluated the potential for using the Recycling Plant as supplemental phosphorus removal treatment for a nearby water reclamation facility.

→ Project specialist for the Central Utah Water Conservancy District, Utah, Water Reuse Feasibility Study. Led the analysis of potential non-potable reuse demands that could be served by four regional water resource recovery facilities in Salt Lake County, Utah for the Central Utah Water Conservancy District. Used GIS and spatial technologies to screen the relative viability of dozens of potential sites for reuse.

→ Project manager for the South Metro Regional Supply Authority, Colorado, Regional Water Supply Master Plan. The authority is a group of 15 municipal water suppliers near Denver, Colorado. The Master Plan outlined a plan to store, treat, and convey sustainable surface water to the area, easing reliance on nonrenewable groundwater by leveraging existing infrastructure capacity.



Inge Wiersema, P.E.

Inge Wiersema is an environmental engineer with 24 years of experience and is specialized in strategic water resources planning, including One Water approaches, as well as traditional utility master planning and hydraulic modeling. Her experience includes potable water, wastewater, recycled water, and stormwater projects. She also brings experience with stakeholder engagement with a broad range of audiences, ranging from the general public to executive management and political leadership.

Ms. Wiersema is a Vice President and serves as Carollo's national One Water Director and Water Resources Practice Lead

Education

MSc Environmental Engineering, Agricultural University, Wageningen, Netherlands, 1997

BS Environmental Engineering, Hogeschool Van Utrecht, Netherlands, 1995

Licenses

Civil Engineer, California

Professional Affiliations

American Water Works Association

Association of Women in Water, Energy, and Environment

Water Environment Federation

WaterReuse Association (Technical Chair of Los Angeles Chapter)

Relevant Experience

→ Project manager for the One Water LA 2040 Plan for the City of Los Angeles, California. The Plan is a collaborative effort of the LA Sanitation (LASAN) and LA Department of Water and Power (LADWP) that takes a holistic approach to consider all types of water as "One Water." The Plan was developed through a stakeholder driven process. Inge was intimately involved in the stakeholder engagement process, preparing and participating in dozens of workshops with various City departments, regional agencies, NGOs, the community, academia, executive management, mayor's office. As Project Manager, Inge was responsible for the coordination of the work effort with City staff from multiple departments and more than 20 subconsultants. The final plan consists of 9 volumes, which will guide the City with strategic and multi-billion dollar decisions to make LA a more water resilient and sustainable City.

→ Technical Advisor and Water Supply Analysis lead for the One Water Morro Bay for the City of Morro Bay, California. This project involved the development of a strategic plan that considered the challenges and solutions of the City's wastewater treatment plant upgrade, development of local water supplies (incl. groundwater, indirect potable reuse and ocean desalination), water conservation strategies, and stormwater in a comprehensive manner. In addition, traditional water/wastewater/recycled water utility master planning with hydraulic modeling and CIP development was part of the project. Ms. Wiersema guided the One Water integration of all project components and optimization of plan recommendations.

→ Planning Engineer and Carollo's Project Manager for the Clean Water Plan for King County, Washington as a key sub consultant to another firm. This ongoing project takes a regional approach with active stakeholder engagement with a Steering Committee, Advisory Group, and public stakeholders to develop comprehensive solutions to address the challenges such as compliance with EPA's consent decree, climate change, environmental and social justice, and affordability. The project involves scenario planning, strategic utility planning, and the development of a financial plan and an environmental impact study. This purpose of this large planning effort is to define a roadmap to help King County make the right investments at the right time for the best water quality results.

→ Project manager for the Integrated Water Resources Plan for Otay Water District, California. This project involved the identification and evaluation of a wide range of water supply options to diversify the District's supply portfolio and reduce reliance on imported water through year 2050. The recommendations were presented to the board of directors.

→ Technical Advisor for the Non-Potable Water Strategic Plan for the City of Aurora, Colorado. This study included alternatives evaluation of a variety of a range of strategies to use new non-potable mountain supplies, lower South Platte return flows, and underutilized water flows from the Sand Creek Reuse facility to meet demands through year 2070. Alternatives were scored based on efficiency in terms of cost, water loss, and energy footprint. The comprehensive "One Water" planning approach considered all available supply options, as well as state and local institutional constraints.

Inge Wiersema, P.E.

→ Task Lead for the 2060 Strategic Water Supply Plan for the Norman Water Utilities Authority, Oklahoma. This project involved demand projections, water conservation potential analysis, supply alternatives analysis, regulatory impacts, storage and supply augmentation evaluations, regional supply options, and a public participation process.

→ Project engineer for Integrated Water Management Plan for the City of Riverside, California. The project identified a supply strategy to meet the City's potable and non-potable water demands, which will consider new wells, recycled water, groundwater recharge, salinity management, water conservation, stormwater, water treatment, and groundwater banking projects. The water supply evaluation identified 15 new water supply project opportunities. Detailed project descriptions, conceptual layouts, facility sizing, treatment options, and cost estimates were developed for each project. The projects were prioritized to meet the projected demands through 2035.

→ Project manager for the Water Supply Planning Study for the City of Santa Barbara, California. The project included the assessments of the reliability of State Water Project water supplies, the impact of climate change on local and regional water supplies, water conservation, and recycled water system expansion opportunities. She was responsible for the coordination of tasks, budget, and schedule. She was also the technical lead on the recycled water system analysis task.

→ Technical advisor for the comprehensive integrated master plan for the City of Oxnard, California. This project resulted in a long-term strategy and capital improvement program (CIP) for the City's water, wastewater, recycled water, and stormwater facilities, including a proposed aquifer storage and recovery (ASR) program. The project involved detailed analysis and CIP planning for the entire urban water cycle. Ms. was the technical lead on the water master plan portion of this project and technical advisor on the integration of all plan elements. The water master plan included water demand forecasting, hydraulic modeling

analysis using WaterGEMS, existing and future system analysis, development of a the water system CIP, including a rehabilitation and replacement program.

→ Project manager for the integrated water, recycled water, and sewer master plan for the City of Oceanside, California. This project includes potable and recycled water demand projections, sewer flow forecasting, water supply analysis, hydraulic model updates and calibration of the water and wastewater system models, and development of a new recycled water system model. An integrated master plan summary report was prepared that combined all plan elements into a prioritized roadmap, as well as individual master plan report for each water type to guide the City with the implementation of system improvements through year 2040.

→ Assistant project manager for the Sun Valley Watershed Management Plan for the County of Los Angeles, California. The project involved investigation of an alternative approach to the traditional storm drain solution to address flooding conditions in the Sun Valley Watershed. The proposed solution included \$150 million in capital improvement projects that addressed the primary flooding problem, while achieving other objectives such as increasing recreation, reducing flows to the Los Angeles River, providing groundwater recharge, reducing stormwater pollution, enhancing habitat, and increasing energy conservation. The project included alternatives analysis, hydrologic watershed modeling, BMPs evaluation, cost estimates, regulatory requirements, watershed management plan development, and conceptual design of five pilot projects. Stakeholder engagement through workshops with the underprivileged community was an integral part of the project.

→ Project manager for the East End Water Supply Reliability Study for the City of Anaheim, California. The project included the definition and prioritization of various outage scenarios using the estimated chance of occurrence, duration, and impact on water availability and system pressures. Improvement projects were grouped and assessed through a portfolio evaluation process.



Beorn Courtney, P.E.

President
ELEMENT Water Consulting

www.elementwaterinc.com

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PROFILE

Beorn is a licensed Professional Engineer with 22 years of experience in a broad range of water resources planning and policy topics including water conservation, water rights, hydrologic and hydraulic analyses, consumptive use and river basin modeling, and the nexus between water and land use planning. She has served as project manager for a variety of state, municipal, and private clients. Beorn has provided expert witness testimony in water court, briefings to the Colorado legislature, and often works closely with clients on stakeholder engagement processes.

PROFESSIONAL INVOLVEMENT

American Council of Engineering Cos.

AWWA Rocky Mountain Section

AWRA Colorado Section
Scholarship Committee

CO Foundation for Water Education
Water Leaders Program

EDUCATION & CERTIFICATION

Professional Engineer
State of Colorado Number 35810
2001

M.S., Water Resources Engineering
University of Colorado at Boulder

B.S., Chemical Engineering
University of Colorado at Boulder

REPRESENTATIVE EXPERIENCE

Technical Update to Colorado's Water Plan (2019). Prepared the statewide municipal and industrial water demand projections for the Colorado Water Conservation Board, using a scenario based planning approach that provides a quantitative analysis to support the qualitative narrative from Colorado's Water Plan. Previously prepared the projected water conservation savings for the Statewide Water Supply Planning Initiative in 2010, adding scientific basis for future active municipal and industrial water conservation savings.

Water Supply Evaluations. Providing water supply and water rights-related diligence investigations for private clients in various phases of development planning. Associated services include research of water rights associated with the property, historical and potential future yields of water rights, and opportunities and limitations in future changes of use. Current projects located in Douglas County and northern Colorado.

City of Aspen Drought Response Program. Providing drought response support including developing drought condition monitoring triggers, leading the City's internal drought response task force, and preparing information for staff recommendations to City Council.

City of Aspen Water Efficient Landscaping Standards. Prepared water-efficient landscaping standards for new construction, including a landscaping water budget approach and efficient irrigation system design and installation requirements. Key services included inter-department and stakeholder engagement, providing presentations to City Council, and ongoing support through implementation of a pilot phase. This work was completed under a grant from the Colorado Water Conservation Board that was prepared by ELEMENT.

Tri-Districts. Providing water resources and water rights consulting services to support future growth within the districts' service areas. Projects include multiple change of use applications, including quantifying historical consumptive use and return flow obligations, negotiating with objectors, and preparing a municipal water efficiency plan.

City of Arvada Water Supply and Demand Study. Applied scenario planning to provide water supply and demand projections under a variety of potential future drought and climate conditions. Evaluated need for additional supplies and/or storage to meet build-out demand projections.

Beorn Courtney, P.E.

President
ELEMENT Water Consulting



www.elementwaterinc.com

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RECENT PRESENTATIONS

Sterling Ranch Water Regulations Presented to homeowners on behalf of the Community Authority Board. March 26, 2019.

Water Demand and Supply Planning Approaches Presented to the Water Resources Management in the Western US course at CU Boulder, March 20, 2019.

Municipal and Industrial Demand Projections for the Colorado Water Plan Statewide Technical Webinar presented on behalf of the Colorado Water Conservation Board. March 19, 2019.

City of Aspen Water Efficient Landscaping Standards Presented to landscape contractors and local stakeholders on March 5, 2019 and at the Qualified Water Efficient Landscape Contractors training program on July 5, 2018.

Water Use and Efficiency Program Reporting under House Bill 10-1051 Presented to the Inter Basin Compact Committee on behalf of the Colorado Water Conservation Board. February 28, 2019.

Sterling Ranch/Dominion Water and Sanitation District. Developing water demand management program for proposed new development in Douglas County, Colorado with water conservation covenants incorporated in the land use zoning. Efforts include creating water efficiency and other sustainability-related specifications for builders, conservation-oriented water rates and tap fees, and a non-potable water reuse plan for integrating supplies from rainwater harvesting with stormwater management.

Roaring Fork Individual and Regional Water Efficiency Plans. Developed municipal water efficiency plans for the City of Aspen, Town of Basalt, Town of Carbondale, and City of Glenwood Springs in the Roaring Fork watershed and worked with the water providers and local stakeholders to create an integrated regional plan as part of a broader watershed effort to increase stream flows and improve watershed health.

Eagle River Water and Sanitation District Water Efficiency Plan. Developed a regional municipal water efficiency plan covering nine municipal metro districts with diverse constituents and stakeholder groups.

Commerce City/SACWSD. Assisted the City and Water District in analyzing water demands and identified opportunities to incentivize low water use landscaping within multi-family projects.

South Metro Water Supply Authority. Conducted a water and land use nexus investigation which led to the prioritization of regional water efficiency programs. Assisted SMWSA staff and members in developing a regional model water efficient landscaping regulation and regional water efficient landscape professional certification program. Portions of this work were completed under a grant from the Colorado Water Conservation Board that was prepared by ELEMENT.

City of Walsenburg. Providing water rights engineering and water supply planning services to the City of Walsenburg, Colorado, including: historical consumptive use analyses of water rights for change of use applications and augmentation plans, preparing substitute water supply plans, evaluating demands and water supply projections, and working with legal counsel to evaluate potential injury associated with other applications.

Animas-La Plata Project. Serving as water resources consultant to a consortium of water users with interstate compact and tribal considerations. Services include water court and water rights accounting support as well as the analysis of integrated water supply operations to maximize the efficient use of available supplies while complying with decree and contract requirements.

Platte River Recovery Implementation Program. Implemented the Water Plan of the Platte River Recovery Implementation Program between 2008 and 2014. Provided technical oversight and program coordination for the water-related committees and managed consultant contracts pertaining to surface and ground water-related projects, water storage and retiming, and water conservation and efficiency projects. Responsible for prioritizing projects and conducting feasibility investigations in support of the Programmatic Environmental Impact Statement.



PROFILE

Logan is a licensed Professional Engineer with 12 years of experience in water efficiency and supply planning, water rights investigations and consumptive use analyses, and modeling to support complex water supply and demand challenges. She has extensive experience managing regional cooperative projects including implementing and operating regional water supply plans, stakeholder engagement, master planning, and regional efficiency and education programs. Ms. Burba's work has integrated a wide range of water resources and operational components to develop creative solutions to complex water supply and demand challenges. Previously, Logan worked on the owner's side as an engineer at South Metro Water Supply Authority, which gives her a unique perspective and project experiences.

PROFESSIONAL INVOLVEMENT

CO Foundation for Water Education
Water Leaders Program

EDUCATION & CERTIFICATION

Professional Engineer
State of Colorado Number 47069
2012

B.S., Civil Engineering
Colorado State University, Fort Collins
2004 – 2007

Logan Burba, P.E.

Senior Water Resources Engineer
ELEMENT Water Consulting

www.elementwaterinc.com
303.481.2365



REPRESENTATIVE EXPERIENCE

Technical Update to Colorado's Water Plan. Prepared the statewide municipal and self-supplied industrial water demand projections using a scenario-based planning approach that provides a quantitative analysis to support the qualitative narrative from Colorado's Water Plan.

City of Walsenburg. Providing water rights engineering and water supply planning services to the City of Walsenburg, Colorado, including preparing an exchange potential analysis for a change of water rights application.

East Larimer County Water District. Consumptive use modeling and GIS mapping for seven farms plus ditchwide analysis to support change of use application in water court case.

City of Aspen Water Efficient Landscaping Standards. Technical support for Water Efficient Landscape and Irrigation Ordinance water budget development and preparation of local information to support professional landscape certification program.

City of Aspen Drought Response Program. Providing drought response support including developing monitoring triggers, supporting the engagement of the City's internal stakeholder drought response task force, and preparing information for staff recommendations to City Council.

South Metro Water Supply Authority. Primary responsibilities at SMWSA involved the implementation of a regional renewable water supply project, the WISE Project. Represented ten water utility members in partnership with Aurora Water and Denver Water to build regional infrastructure to support treated water deliveries. Part of staff team responsible for negotiation, implementation, and management of operations and delivery agreements between all partner authorities. Responsibilities also included creation of regional Conservation and Efficiency Subcommittee. Led group in collaborative conservation efforts including regional land use investigation and development of Model Regional Landscape and Irrigation Efficiency Ordinance.

South Metro Water Supply Authority Master Plan. Managed a consultant team to develop South Metro's first regional Master Plan. Work included quantification of demands and average and firm supply yields for each of 13 regional utility members for current conditions and 2050 projections. Quantified regional projected supply gap and future renewable supply goal. Worked with regional group to develop future renewable supply alternatives and to develop evaluation criteria to rate potential alternatives.

ROB GREENWOOD (STAKEHOLDER ENGAGEMENT SPECIALIST)

Principal, Ross Strategic

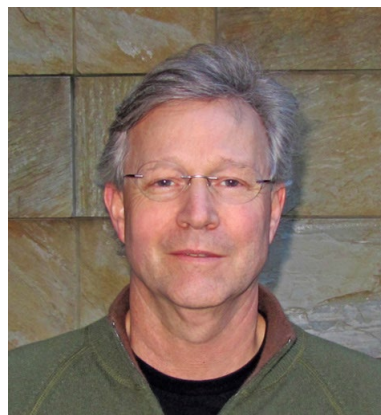
Experience Profile

Rob Greenwood specializes in designing and convening multi-stakeholder collaborative processes to address complex environmental challenges with a specific focus on the water resource arena. Mr. Greenwood has spent 30 years convening challenging and often fractious dialogs engaging executive level participants (corporate CEOs, water utility Executive Directors, State and Federal regulatory program Directors, local and state-level elected officials, and prominent leaders from environmental, public health, community, business, and labor advocacy organizations) at the local, national, and international levels consistently delivering fully endorsed, robust, and resilient outcomes. His engagement experience spans one-day organizational retreats, community engagement workshops, and multi-year, multi-stakeholder advisory committees.

Relevant Project Experience

King County, WA Clean Water Plan Regional Engagement. Mr. Greenwood is currently leading Ross Strategic's team of communications, public meeting, and advisory group engagement specialists to provide support to a multi-pronged community engagement strategy directed to raise understanding of and support for the preparation of King County's Clean Water Plan. This effort involves close coordination and collaboration with the County's technical planners (engineers, scientists, etc.) and encompasses media analysis and ad buys, an online open house, stakeholder workshops, a chartered advisory group, and broader community engagement including tabling events and promotional booths.

US EPA National PFAS Summit and National Action Plan. Mr. Greenwood supported the US EPA Office of Ground Water and Drinking Water plan, structure, and convene the May 22-23, 2018 National Leadership Summit in Washington, D.C. to take action on Per- and Polyfluoroalkyl Substances (PFAS) in the environment. The convening brought together 225 public, private, and civil society leaders to share information on ongoing efforts to characterize PFAS risks, identify specific near-term actions needed to address challenges currently facing states and local communities, and develop risk communication strategies that will help communities to address public concerns with PFAS. After the national summit, Mr. Greenwood worked with the EPA to plan, structure, and facilitate community engagement sessions held around the United States to hear directly from the public on how to best help states and communities facing this issue.



EDUCATION

M.P.A., University of Washington (finance concentration), 1994

B.A., Economics, University of Colorado, 1980

PROFESSIONAL EXPERIENCE

Principal, Ross Strategic, 1988–present

Jellinek, Schwartz, Connolly & Freshman, Inc., 1983–1988

Environmental and Energy Study Conference of the U.S. Congress, 1983

Peace Corps Volunteer, Sierra Leone, West Africa, 1980-1983

Prince William County Service Authority Strategic Plan Facilitation. Mr. Greenwood worked with PWCSA's Executive Team to design and implement a strategic planning process that engaged functional area teams (such as finance, engineering, O&M, customer support) in SWOT analysis interviews and culminated with convening a 50-staff person, 2-day strategic planning workshop supporting preparation of a final strategic plan document.

Camden County Municipal Utility Authority Long-Term Control Plan Stakeholder Facilitation. Rob Greenwood worked closely with the CCMUA Executive Director and a team of utility leaders, local stakeholders (state regulators, community advocates, environmental advocates, and academics), and technical consultants to convene three day-long meetings to identify, rank, and quantitatively translate a range of community values for systematic incorporation into the LTCP alternatives analysis approach.

Louisville Municipal Sewer District Wet Weather Program Team Facilitation Mr. Greenwood provided process design, issues characterization, convening, and intensive consensus building services to this 2.5-year, multi-stakeholder, multi-disciplinary Wet Weather Team (WWT) that reached full consensus on an \$850M, 25-year program to address combined sewer and sanitary sewer overflows. The WWT consisted of representatives from Louisville Metro Government (the Deputy Mayor and department heads from Parks, Land Use, and Public Health), elected members of the Louisville Metro Council, local academic institutions, business, environmental, public health, neighborhood, and environmental justice advocacy organizations, and scientific and engineering technical specialists.

EPA Lead in Drinking Water Action Plan – Stakeholder Convening Support. In response to the Flint, MI lead in drinking water crisis and to inform development of this Plan, Mr. Greenwood supported US EPA (Administrator Gina McCarthy and OGWDW Director Peter Grevatt) to engage a diverse array of stakeholders (including state and tribal environmental and health officials, local government officials and community organizations, drinking water utilities, technical assistance providers, and NGOs dedicated to public health and safe drinking water) in a series of three, one-day meetings that provided the primary content for the Action Plan.

ASDWA/ACWA Clean and Safe Water Emerging Contaminants Advisory Group Facilitation. Mr. Greenwood supported the Association of State Drinking Water Administrators and the Association of Clean Water Administrators in convening an advisory group comprised of state drinking water, clean water, and public health officials to make recommendations for improving the policy and regulatory context for addressing emerging contaminants such as PFAS and cyanotoxins.

Addressing Nutrient Pollution through a Statewide Utility – Stakeholder Workgroup Facilitation. Mr. Greenwood convened and facilitated a multi-interest stakeholder group (consisting of wastewater utility leaders, agricultural sector leaders, regulatory and technical assistance agencies, and NGO water quality advocates) as they prepared consensus recommendations for the design of a statewide nutrient utility to support implementation of the State of Illinois Nutrient Loss Reduction Strategy.

United Nations Global Compact, CEO Water Mandate Stakeholder Dialogs. Mr. Greenwood provides convening, facilitation, and workstream design and analysis support to the UNGC CEO Water Mandate, a UN Secretary General's international voluntary initiative bringing together senior corporate executives, civil society representatives, and public institution leaders from around the globe to advance corporate water stewardship and sustainable water management. He has supported the Mandate's bi-annual, multi-stakeholder meetings since 2009 conducted in Istanbul, Stockholm, New York City, Cape Town, Copenhagen, Rio de Janeiro (as part of the Rio +20 Sustainability Summit), Mumbai, and Lima. Discussions address topics such as The Human Right to Water and Sanitation prior to its formal declaration in 2010, and the formulation of water-related Goal 6 in the current UN SDGs.

Sarah Shadid

ASSOCIATE, ROSS STRATEGIC

Experience Profile

Sarah has a strong background in research, strategy, analysis, and facilitation in water, energy, and environmental policy issues. Sarah is an integral member of Ross Strategic's water practice and has developed a wide-ranging portfolio of water sector project experience. Sarah's experience includes projects with major water sector associations such as the Association of State Drinking Water Administrators, the Water Research Foundation, and the Water Environment Federation as well as multiple offices under the US EPA's Office of Water. Sarah has also worked with individual systems, such as Prince William County Service Authority and King County's Wastewater Treatment Division. Projects with these clients spans multiple content areas, including contaminants of emerging concern in the water lifecycle; alternatives analysis support for small utilities; strategic planning; and effective utility management initiatives. Sarah is passionate about working with clients to more effectively design and convene multi-stakeholder groups to help communities make informed decisions for drinking water, wastewater, and stormwater infrastructure to increase resiliency, protect human health, and safeguard the environment.

Relevant Project Experience

King County, WA Clean Water Plan Regional Engagement Sarah is a part of Ross Strategic's team of communications, public meeting, and advisory group engagement specialists providing support to a multi-pronged community engagement strategy directed to raise understanding of and support for the preparation of King County's Clean Water Plan. This effort involves close coordination and collaboration with the County's technical planners (engineers, scientists, etc.) and encompasses media analysis and ad buys, an online open house, stakeholder workshops, a chartered advisory group, and broader community engagement including tabling events and promotional booths.

Contaminants of Emerging Concern Recommendations Report: Each year, state water resource managers across the country are responsible for managing a growing list of substances that may be present in their waters and that are suspected to negatively impact the human and ecological health of their communities. In 2018, Sarah and the Ross Strategic team were brought on by the Association of Clean Water Administrators (ACWA) and Association of State Drinking Water Administrators (ASDWA) to convene a workgroup of clean water and drinking water resource managers from across the country to discuss recommendations to improve the management of these contaminants of emerging concern. Over eight months, the team conducted interviews and facilitated two



Education

MPA, Evans School of Public Policy and Governance, University of Washington, 2015

B.A., History, University of New Mexico, 2012

Professional Experience

Associate, Ross Strategic, 2017-present

Research Associate, Ross Strategic, 2016–2017

Assistant Program Coordinator, Energy Efficiency Services, C+G, 2015

Teaching Assistant, University of Washington, 2014

Board Member, Landmarks Preservation Board of Seattle, 2014–2015

Substitute Teacher, Albuquerque Public Schools, 2013–2014

Legal Assistant, The Romero Law Firm, P.A., 2012–2013

in-person meeting to map the current voluntary and regulatory processes for contaminants at a state and federal level, as well as to identify barriers to an efficient and effective process to control occurrence of these contaminants in the water cycle. Sarah worked with the client and workgroup to produce a recommendations report outlining a core set of actions to optimize control of potentially adverse impacts across the entire water cycle. The report was reviewed and refined by the workgroup before being submitted to the ACWA and ASDWA boards for review in Spring 2019.

Alternatives Analysis: Incorporating Sustainability Criteria into Water Utility Decision Making: Since 2016, Sarah has supported the EPA Office of Water in developing and testing an augmented alternatives analysis process for small to medium size utilities facing significant investments to evaluate the full range of social, environmental and economic benefits that investments can create while also establishing a common ground on which utilities and their communities can communicate with each other in a clear and accessible format to find affordable and effective solutions. Once the step by step process had been developed, Sarah and the Ross team were engaged to test and refine this process in a pilot effort with Camden County Municipal Utilities Authority (CCMUA) as they developed a Long-Term Control Plan (LTCP). In 2015, CCMUA had begun developing their LTCP to address combined sewer overflows for a community that had 70 CSOs a year on average, plus stormwater flooding and residential sewer backups. CCMUA also sought the opportunity to address community sustainability, resiliency, and quality of life improvement through the incorporation of Augmented Alternatives Analysis. Sarah and a teammate led a stakeholder advisory committee (comprised of state regulators, environmental and community advocates, and academics) through a process to incorporate community sustainability and quality of life values and goals into LTCP planning. The Ross team worked with LTCP consulting engineers to link values with technical planning and analytical methods; facilitated three all-day meetings where members identified values designed to influence the selection of alternatives; and translated those values into objectives and performance criteria for use in LTCP alternatives analysis. The identification of community values and translation into measurable objectives and criteria expanded the performance evaluation basis for LTCP alternatives. CCMUA systematically incorporated community sustainability considerations and optimized its infrastructure investments to meet Clean Water Act requirements and community sustainability and quality of life interests.

Prince William County Service Authority 2017-2022 Strategic Plan: In 2017, Ross Strategic was engaged to help design a five-year strategic plan for the Prince William County Service Authority (PWCSA). Sarah and the Ross Team conducted interviews across departments to identify strengths, weaknesses, opportunities and threats for PWCSA. Using the SWOT analysis as the basis for discussions, Sarah and her colleague facilitated a two-day workshop at PWCSA with representation across the utility, from leadership to new hires. During this workshop the Ross Strategic team helped the group refine their five-year goals to address critical weaknesses and threats as well as to take advantage of identified opportunities. The strategic plan that resulted from this effort now plays an ongoing critical role in the management and operations of PWCSA. Each year, staff uses the strategic to develop the annual business goals and due dates, and it is an integral part of every department's planning, budgeting, performance measurements and daily operations.

Utility Strengthening Through Consolidation: In 2018, the US Water Alliance engaged Ross Strategic to facilitate a leadership dialogue that brought together water executives, community leaders, and policymakers in a cross-sector discussion. The dialogue explored the role consolidation can play in helping water sector utilities, and the communities they serve, address existing and anticipated challenges; the benefits consolidation can provide; and the barriers hindering the rate and scope of consolidation in the US Water sector. In advance of this convening, Sarah and her colleague conducted interviews with each attendee and prepared a discussion document to

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